LABOUR ABSORPTION IN INDIAN AGRICULTURE

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Paper to be presented at the Seminar on "Development and Inter-regional Disparities in India" to be held at the Giri Institute during March 19-21, 1983.

Part-IV

Labour Absorptinn in Indian Agriculture.

4.1 Introduction

This part of the report is devoted to the discussion of factors that explain variations in labour absorption in Indian agriculture in the different regions of India.

There are two ways of increasing employment in agricultural operations. One method is to employ additional labour force on increased net area. As technology remains constant, per hectare labour absorbed in new lands would be the same as in the existing areas and hence one could expect productivity per worker to remain constant. Since area increases in India have been very small (0.71 per cent per annum), very little labour force seems to have been absorbed in this way.

The second method of absorbing additional labour force is by increasing output per hectare through the use of modern inputs and/or through increasing cropping intensity without a proportionate increase in labour productivity. Higher yield per hectare on net down area can either be achieved through multiple cropping or through the use of fertilizers and other modern inputs. Modern biological inputs are land augmenting as the new seeds result in short duration crops. Moreover, the introduction of new technology is associated with the use of modern implements for irrigation and other operations.

Investment in irrigation structures is generally labour absorbing as it leads to higher yields and increased cropping intensity. But investment in tractors, threshers, harvestor combines other mechanical implements is generally labour displacing. In certain situations even this investment can lead to higher cropping intensity through timeliness in operations. The over all level of employment as

also of labour productivity in agriculture is determined by the combined effect of labour absorbing and labour displacing investments.

Taking India as a whole, the fact that during 1962-65 to 1970-73, labour productivity (output/Male Agricultural workers) has remained constant, although land yield has recorded a fairly substantial rise, indicates that increased output has been equally counter balanced by increased labour force in agriculture.

But as discussed in detail in Part III, there are very large variations with regard to the extent of labour absorption, labour productivity and land man ratio in various parts of India. An attempt is made below to analyse the inter-regional variations in labour productivity.

In the earlier sections we have classified all the districts in India on the basis of their (a) growth of output (b) growth of yield, and (c) levels of land yield. We have retained this very classification scheme for our present analysis also. The main characteristics of the re various sets of districts regarding their man-land ratios, labour productivity, input use levels etc have already been discussed in detail in Part-II and Part-III of the report. We, therefore, now proceed to analyse the various factors that are responsible for inter-district variations in labour use in various setsof districts.

4.2 Inter-Districts Variations in Labour use - Growth of Output Classification.

We have basically postulated that the demand for labour is a function of output per hectare. In short we are fitting a demand for labour function.

In another version of the model, instead of taking land yield as an explanatory variable for demand for labour, we have taken various inputs like irrigation, fertilizers,

tractors, tubewells, intensity of cultivation as a proxy for land yield. The formulation of the model is as follows:

Version A — Equation No. in Table 19

$M/H = f\ (O/H)$ (5)

$M/H = f\ (GCA/H,\ GIA/H)$ (1)

$M/H = f\ (GCA/H,\ F/H)$ (2)

$M/H = f\ (GCA/H,\ F/H,\ Tr/H)$ (3)

$M/H = f\ (GCA/H,\ GIA/H,\ F/H,\ Tr/H)$ (4)

The equations have been fitted for all the 281 districts and also for the four regions formed by classifying these districts according to their growth of output during 1962-65 to 1970-73. The results for both the sixties and the seventies are summarised below in Table 19.

(1) The demand for labour function given by equation (5) shows that the relationship postulated is established with a significant correlation coefficient for all categories of districts when classified according to their growth of output. Obviously at the current level of technology, employment in agriculture is related to yield levels.

(2) Furthermore, it is interesting to note that the elasticity of employment with respect to yield hovers around unity for all the four categories, indicating once again the operation of suction mechanism. Employment is increasing more or less in direct proportion to yield increases thereby leaving labour productivity constant.

But for the high growth districts, the elasticity figure is significantly less than unity in both the periods. In these districts labour productivity is rising as yield increases at a higher rate than labour force.

The elasticity of employment with respect to yield is more or less unity for 117 mid and low growth districts, but is significantly higher than unity for the negative

Table: 19(i)

INTER DISTRICT VARIATIONS IN LABOUR USE

Double Log Function — : Growth of Output Classification

1960's Districts

	Intercept	GCA/H	GIA/H	F/H	Tr/H	Q/H	$\bar{R}^2$
Above (3.0) per cent N=100							
MW/H=f(GCA/H, GIA/H)	-5.2878	1.9426	-	-	-	-	0.2314
	(3.17)	(5.55)					
MW/H=f(GCA/H, F/H)	-2.2983	1.3016	-	0.1067	-	-	0.3097
	(1.27)	(3.43)		(3.48)			
MW/H=f(GCA/H, F/H, Tr/H)	-3.8269	1.7214	-	0.1518	-0.1435	-	0.4015
	(2.17)	(4.67)		(4.95)	(3.98)		
MW/H=f(GCA/H, GIA/H, F/H, Tr/H)	-3.8269	1.7214	-	-0.1518	-0.1435	-	0.4015
	(2.17)	(4.67)		(4.95)	(3.98)		
MW/H=f(Q/H)	-2.3737	-	-	-	-	0.8919	0.2435
	(2.14)					(5.73)	
(1.5 to 3.0) per cent N= 72							
MW/H=f(GCA/H, GIA/H)	-6.8694	2.2354	0.1509	-	-	-	0.5744
	(3.57)	(5.54)	(4.59)				
MW/H=f(GCA/H, F/H)	-6.5762	2.2389	-	0.1457	-	-	0.6107
	(3.67)	(5.96)		(5.43)			
MW/H=f(GCA/H, F/H, Tr/H)	-6.5762	2.2389	-	0.1457	-	-	0.6107
	(3.67)	(5.96)		(5.43)			
MW/H=f(GCA/H, GCI/H, F/H, Tr/H)	-6.5761	2.2389	-	0.1457	-	-	0.6107
	(3.67)	(5.96)		(5.43)			
MW/H=f(Q/H)	-3.4537	-	-	-	-	1.0699	0.2256
	(2.11)					(4.66)	

Table: 19(ii)

INTER DISTRICT VARIATIONS IN LABOUR USE

Double Log Function PK(142): Growth of Output Classification

1960's Districts

0-1.5 per cent N=45	Intercept	GCA/H	GIA/H	F/H	Tr/H	Q/H	$\bar{R}^2$
MW/H=f(GCA/H, GIA/H)	-10.8453 (4.67)	3.1874 (6.51)	-	-	-	-	0.4843
MW/H=f(GCA/H, F/H)	-9.6386 (4.11)	2.9060 (5.91)	-	0.0674 (1.91)	-	-	0.5141
MW/H=f(GCA/H, F/H, Tr/H)	-96386 (4.11)	2.9060 (5.91)	-	0.0674 (1.91)	-	-	0.5141
MW/H=f(GCA/H, GIA/H, F/H, Tr/H)	-9.6386 (4.11)	2.9060 (5.91)	-	0.0674 (1.91)	-	-	0.5141
MW= (Q/H)	-2.1269 (0.95)	-	-	-	-	0.9021 (2.85)	0.1394
Less than 0 N=64							
MW/H=f(GCA/H, GIA/H)	-5.0776 (2.85)	1.8762 (4.99)	0.1006 (3.02)	-	-	-	0.4743
MW/H=f(GCA/H, F/H)	-64455 (3.84)	2.1967 (6.19)	-	0.0973 (2.35)	-	-	0.4458
MW/H=f(GCA/H, F/H, Tr/H)	-6.4456 (3.84)	2.1967 (6.19)		0.0973 (2.35)	-	-	0.4458
MW/H=f(GCA/H, GIA/H, F/H, Tr/H)	-5.0777 (2.85)	1.8762 (4.99)	0.1006 (3.02)	-	-	-	0.4743
MW/H=(Q/H)	-5.1114 (3.39)	-	-	-	-	1.2877 (6.04)	0.3603

Table: 19(iii) INTER DISTRICT VARIATIONS IN LABOUR USE

Double Log Function : 1970's Growth of Output Classification

Above 3 percent N = 100	INTERCEPT	GCA/H	GIA/H	F/H	Tr/H	Q/H	$\bar{R}^2$
1. MW/H= f(GCA/H,GIA/H)	-6.4962 (4.64)	2.2023 (7.59)	-	-	-	-	0.3637
2. = f(GCA/H,F/H)	-3.1597 (2.01)	1.4355 (4.40)	-	0.1426 (4.16)	-	-	0.4544
3. = f(GCA/H,F/H,Tr/H)	-4.4709 (3.10)	1.8269 (6.16)	-	0.2244 (6.62)	-0.1664 (5.36)	-	0.5756
4. = f(GCA/H,GIA/H,F/H,Tr/H)	-4.4709 (3.10)	1.8270 (6.16)	-	0.2244 (6.62)	-0.1664 (5.36)	-	0.5756
5. = f(Q/H)	-2.2234 (3.11)	-	-	-	-	0.8687 (8.91)	0.4419
1.5 to 3.0 Percent N = 72							
1. MW/H = f(GCA/H,GIA/H)	-9.0126 (4.19)	2.7217 (6.06)	0.1117 (2.93)	-	-	-	0.5 27
2. = f(GCA/H,F/H)	-7.1050 (3.86)	2.2961 (5.97)	-	0.1858 (5.87)	-	-	0.6568
3. = f(GCA/H,F/H,Tr/H)	-6.9390 (3.85)	2.3160 (6.17)	-	0.2345 (6.14)	-0.0952 (2.16)	-	0.6732
4. = f(GCA/H,GIA/H,F/H,Tr/H)	-6.9390 (3.85)	2.3160 (6.17)	-	0.2345 (6.14)	-0.0952 (2.16)	-	0.6732
5. = f(Q/H)	-4.4857 (3.67)	-	-	-	-	1.2201 (7.19)	0.4163

Table: 19(iv)

INTER DISTRICT VARIATIONS IN LABOUR USE

Double Log Function : 1970's Growth of Output Classification

0 to 1.5 Percent N = 45	INTERCEPT	GCA/H	GIA/H	F/H	Tr/H	Q/H	R^{-2}
1. MW/H= f(GCA/H,GIA/H)	-10.3603 (4.01)	3.0872 (5.71)	-	-	-	-	0.4179
2. = f(GCA/H,F/H)	-10.3603 (4.01)	3.0872 (5.71)	-	-	-	-	0.4179
3. = f(GCA/H,F/H,Tr/H)	-10.3603 (4.01)	3.0872 (5.71)	-	-	-	-	0.4179
4. = f(GCA/H,GIA/H,F/H,Tr/H)	-10.3603 (4.01)	3.0872 (5.71)	-	-	-	-	0.4179
5. = f(Q/H)	2.4687 (1.22)	-	-	-	-	0.9642 (3.40)	0.1932
Less than 0 Percent N = 64							
1. MW/H= f(GCA/H,GIA/H)	9.0423 (3.39)	2.7454 (4.87)	0.1204 (2.62)	-	-	-	0.4958
2. = f(GCA/H,F/H)	-11.5891 (5.13)	3.2936 (6.89)	-	0.1100 (2.76)	-	-	0.5015
3. = f(GCA/H,F/H,Tr/H)	-11.5891 (5.13)	3.2936 (6.89)	-	0.1100 (2.76)	-	-	0.5015
4. = f(GCA/H,GIA/H,F/H,Tr/H)	-11.5891 (5.13)	3.2936 (6.89)	-	0.1100 (2.76)	-	-	0.5015
5. = f(Q/H)	6.1700 (3.18)	-	-	-	-	1.4756 (5.35)	0.5015

growth districts. In the latter as explained earlier, despite small increased in yield, population pressure on agriculture keeps an mounting because of lack of alternative opportunities.

3. The explanatory power of the model has considerably increased during the seventies as compared with the sixties. for the high and medium growth districts, the relationship has become slightly weaker. A further question that can be asked is about the mechanism of labour absorption in the process of yield increases. Do all factors that lead to increased yields also lead to increased labour employment? Equations (i) and ( ) in the second version of themodel provide an answer to this question.

(a) At the first stage we hypothesise that since intensity of cultivation(GCA/H) and irrigation (G-IA/H) are major explanatory factors for output per hectare, they should also provide a good explanation of variations in labour 'employment'. Equation (i) shows that this is indeed so. In fact, it is obvious that for the high growth districts, intensity of cultivation alone explains 36 per cent of labour use variations during the 70's (compared with only 23 percent during the 60's) and has a very high elasticity bearing

2. This shows that a 100 percent increase in intensity results in double the increase in labour use. For low growth districs also intensity alone is a good explanatory variable.

For the medium and negative growth districts, intensity combines with i rigation to give very good explanation of

employment variations. 132

(b) Interestingly enough, the addition of fertilizers (in equation 2) substantially increases the explanatory power of the model. Fertilizers have a positive and statistically significant elasticity with respect to labour use in agriculture.

(c) One of the most notable results is that tractors when entered with other input variables have a negative and significant elasticity of employment in the high and medium growth districts. (As tractor use is very limited in the low and negative growth districts, this variable does not enter in the equation at all for these two sets.)

This is again in conformity with our earlier proposition that whereas mechanical innovations tend to displace labour, the biological inputs like fertilizers combined with higher intensity of cultivation have a strongly positive effect on employment in agriculture. It also shows that at the current level of technology the employment effect of labour absorbing biological and land augmenting innovations is much stronger than that of labour displacing mechanical inputs.

4.3 Labour Absorption and Growth of Yield

As noted earlier all the 281 districts have also been divided into four categories by classifying them according to their growth of land yield. We have already discussed the main characteristics of these districts with regard to their average yield levels and average use of various inputs. In part II of the report. The average levels and changes that took place in their labour productivity, labour use and land man ratios have been discussed in detail in Part III. With their average characteristics in mind we proceed to analyse the relationship between labour use and yield levels of these four sets of districts. As earlier, we also use various inputs as a proxy for yield to analyse the relationship between labour per hectare and intensity of use of these inputs.

4.4 Variations in Labour Use in Agriculture - Growth of Yield Classification

The results for the regression equations 1 - 5 for growth of yield classification are given in Table .

It is obvious that the results in this case are very similar to those obtained for growth of output classification. As earlier, land yield turns out to be a significant explanatory variable for employment in Indian agriculture.

Furthermore, when intensity of cultivation and other inputs are taken as a proxy for yield, they individually and in combination with each other are able to explain a large proportion of labour use variation in agriculture in all the four sets of districts. Intensityof cultivation by itself if very important in high yield growth districts. The degree of fit increases considerably with the introduction of irrigation, fertilizers and tractors. Tractors that appear in high and low growth districts only during the 70's (and in high and medium growth districts during the 60's). as expected have a negative elasticity of employment However, it is significant to note that the labour displacing effect of tractors is much smaller compared with labour absorptive effect of increasing intensity of cultivation.

4.5 Labour Absorption - Yield Level Classification.

The main characteristics regarding man land ratio, labour productivity etc of districts classified according to their yield levels havealready been described in detail in Part III of the report. Our purpose now is to test whether the relationship between yield levels and labour absorption that holds for districts when classified according to their rates of growth is also true for districts when classified according to their yield levels, so that the initial differences in levels of yield are explicitly

INTER DISTRICT VARIATIONS IN LABOUR USE

Table: 20(i)

Double log Function: Growth of Yield Classification

1960's Districts

Above 3.0 N=74	Intercept	GCA/H	GIA/H	F/H	Tr/H	Q/H	$\bar{R}^2$
MW/H=f(GCA/H, GIA/H)	-4.9545	1.8677	-	-	-	-	0.1997
	(2.43)	(4.38)					
MW/H=f(GCA/H, F/H)	-0.9745	1.0087	-	0.1473	-	-	0.2930
	(0.42)	(2.10)		(3.24)			
MW/H=f(GCA/H, F/H, Tr/H)	-3.2628	1.6034	-	0.1928	-0.1568	-	0.3767
	(1.40)	(3.29)		(4.29)	(3.25)		
MW/H=f(GCA/H, GIA/H, F/H, Tr/H)	-3.2628	1.6034	-	0.1928	-0.1568	-	0.3767
	(1.40)	(3.29)		(4.29)	(3.25)		
MQ=(Q/H)	-2.1145	-	-	-	-	0.8539	0.1883
	(1.47)					(4.23)	
1.5 to 3.0 per cent N=71							
MW/H=f(GCA/H, GIA/H)	-6.8470	2.2395	0.1399	-	-	-	0.5209
	(3.62)	(5.64)	(4.46)				
MW/H=f(GCA/H, F/H)	-6.5418	2.2296	-	0.1299	-	-	0.5269
	(3.48)	(5.65)		(4.59)			
MW/H=f(GCA/H, F/H, Tr/H)	-6.0825	2.1853		0.1612	-0.0891	-	0.5459
	(3.29)	(5.65		(5.04)	(1.96)		
MW/H=f(GCA/H, GIA/H, F/H, Tr/H)	-5.6135	2.0521	0.0856	0.1123	-0.0939	-	0.5702
	(3.08)	(5.38)	(2.19)	(2.93)	(2.12)		
MW/H=(Q/H)	-1.3029	-	-	-	-	0.7687	0.1693
	(0.93)					(3.91)	

Table: 20(ii)

INTER DISTRICT VARIATION IN LABOUR USE

Double Log Function: Growth of Yield: Classification

1960's: Districts

0-1.5 per cent N=68	Intercept	GCA/H	GIA/H	F/H	Tr/H	Q/H	$\bar{R}^2$
MW/H=f(GCA/H, GIA/H)	-6.9515 (3.07)	2.2957 (4.62)	0.0963 (2.83)	-	-	-	0.4805
MW/H=f(GCA/H, F/H)	-7.0444 (3.63)	2.3507 (5.75)	-	0.1127 (4.24)	-	-	0.5430
MW/H=f(GCA/H, F/H, Tr/H)	-7.444 (3.63)	2.3507 (5.75)	-	0.1127 (4.24)	-	-	0.5430
MW/H=f(GCA/H, F/H, GIA/H, Tr/H)	-7.444 (3.63)	2.3507 (5.75)	-	0.1127 (4.24)	-	-	0.5430
MW/H= (Q/H)	-4.4997 (2.65)	-	-	-	-	1.2185 (5.11)	0.2724
Less than 0 N=68							
MW/H=f(GCA/H GIA/H)	-5.9367 (3.72)	2.0516 (6.11)	0.1018 (3.39)	-	-	-	0.5666
MW/H=f(GCA/H, F/H)	-7.5780 (5.02)	2.4349 (7.66)	-	0.0753 (2.15)	-	-	0.5236
MW/H=f(GCA/H, F/H, Tr/H)	-7.5780 (5.02)	2.4349 (7.66)	-	0.0753 (2.15)	-	-	0.5236
MW/H=f(GCA/H, GIA/H, F/H, Tr/H)	-5.9361 (3.72)	2.0516 (6.11)	0.1018 (3.39)	-	-	-	0.5666
MW/H=f(Q/H)	-5.6601 (3.64)	-	-	-	-	1.3694 (6.21)	0.3589

INTER DISTRICT VARIATIONS IN LABOUR USE

Table: 20(iii) Double log Function: Growth of Yield Classification

1970's Districts

Above 3.0 per cent N=74	Intercept	GCA/H	GIA/H	F/H	Tr/H	Q/H	$\bar{R}^2$
MW/H=f(GCA/H GIA/H)	-6.5116 (3.70)	2.2005 (6.06)	-	-	-	-	0.3236
MW/H=f(GCA/H, F/H)	-2.7857 (1.35)	1.3405 (3.15)	-	0.1589 (3.36)	-	-	0.4127
MW/H=f(GCA/H,F/H,Tr/H)	-5.9082 (2.88)	2.1730 (5.18)	-	0.2335 (5.18)	-0.2174 (4.50)	-	0.5381
MW/H=f(GCA/H, GIA/H,F/H,Tr/H)	-5.9082 (2.88)	2.1730 (5.18)	-	0.2335 (5.18)	-0.2174 (4.50)	-	0.5381
MW/H=(Q/H)	-2.2153 (2.36)	-	-	-	-	0.8639 (6.79)	0.3817
1.5 to 3.0 per cent N=71							
MW/H=f(GCA/H, GIA/H)	-6.3535 (3.84)	2.1206 (6.16)	0.1822 (4.94)	-	-	-	0.5713
MW/H=f(GCA/H, F/H)	-6.3151 (3.88)	2.1308 (6.29)	-	0.1687 (5.14)	-	-	0.5804
MW/H=f(GCA/H, F/H, Tr/H)	-6.3151 (3.88)	2.1308 (6.29)	-	0.1687 (5.14)	-	-	0.5804
MW/H=f(GCA/H,GIA/H, F/H, Tr/H)	-5.9896 (3.67)	2.0406 (6.05)	0.0956 (1.78)	0.1046 (2.16)	-	-	0.5933
MW/H=(Q/H)	-2.2904 (2.23)	-	-	-	-	0.9171 (6.45)	0.3670

Table : 2Q(iv)

INTER DISTRICT VARIATIONS IN LABOUR USE
Double Log Function: Growth of Yield Classification

1970's Districts

0-1.5 Per cent N=68	Intercept	GCA/H	GIA/H	F/H	Tr/H	Q/H	$\bar{R}^2$
MW/H=f(GCA/H, GIA/H)	-9.8971 (3.90)	2.9440 (5.54)	0.0723 (1.85)	-	-	-	0.4844
MW/H=f(GCA/H, F/H)	-8.7775 (4.42)	2.6725 (6.41)	-	0.1649 (5.10)	-	-	0.6125
MW/H=f(GCA/H, F/H, Tr/H)	-9.0901 (4.69)	2.7951 (6.90)	-	0.2073 (5.81)	-0.1003 (2.43)	-	0.6398
MW/H=f(GCA/H, GIA/H, F/H,Tr/H)	-10.8293 (5.18)	3.1767 (7.28)	-0.0914 (2.06)	p.2675 (5.88)	-0.984 (2.44)	-	0.6571
Mw/H=(Q/H)	-4.9192 (3.20)	-	-	-	-	1.2909 (6.00)	0.3434
Less than 0 per cent N=68							
MW/H=f(GCA/H, GIA/H)	-10.6272 (3.62)	3.0891 (4.97)	0.0904 (2.04)	-	-	-	0.4885
MW/H=f(GCA/H, F/H, Tr/H)	-12.7268 (5.25)	3.5455 (6.90)	-	0.0763 (2.10)	-	-	0.4902
MW/H=f(GCA/H, . . , F/H, Tr/H)	-12.7268 (5.25)	3.5455 (6.90)	-	0.0763 (2.10)	-	-	0.4902
MW/H=f(GCA/H, GIA/H, F/H,Tr/H)	-12.7268 (5.25)	3.5455 (6.90)	-	0.0763 (2.10)	-	-	0.4902
MW/H= (Q/H)	-7.3226 (3.67)	-	-	-	-	1.6380 (5.76)	0.3242

accounted for. This might give us a clue as to whether the growth of output (yield) is the main determinant of suction mechanism or whether level of yield by itself is the main causal factor.

It is possible to get an intutive answer to this question from Table that gives the characteristics of 3 sets of districts obtained after classifying them according to their yield levels.

In the high yield districts, labour has been absorbed at a higher rate than growth of output over 1962-65 to 1970-73. Hence labour productivity has declined. In the mid yield districts, labour force growth rate has kept pace with output growth and labour productivity has remained more or less constant. Similarly in the low yield districts, labour productivity has remained constant as labour has increased at almost the same rate as output.

4.6 Variations in Labour Absorption - Yield level Classification.

It is obvious from the above description that the land yield classification fails to reveal substantial changes in the relationship between land yield and labour absorption over the period 1962-65 to 1970-73. The results of the statistical analysis undertaken on districts classified according to their yield level is given below in Table . This confirms our hunch that yield level classification fails to bring out any systematic relationship between yield levels and man land ratio during the 60's or 70's. The regression results are summarised below.

1. Yield levels by an large fail to explain variations in labour absorption in either of the two periods. The regression co-efficients are insignificant for the high yield districts during the seventies and though significant [illegible] work for the sixties indicating a lack

Table: 21(i)

INTER DISTRICT VARIATIONS IN LABOUR USE

Double Log Functions: 1970's Yield Level Classification 1960's Districts:

Above 1550 N= 77	Intercept	GCA/H	GIA/H	F/H	Tr/H	Q/H	$\bar{R}^2$
MW/H=f(GCA/H, GIA/H)	Insignificant						
MW/H=f(GCA/H, F/H)	Insignificant						
MW/H=f(GCA/H, F/H, Tr/H)	4.7412 (34.20)	-	-	0.0582 (1.63)	-0.1214 (4.08)	-	0.1680
MW/H=f(GCA/H, GIA/H,F/H, Tr/H)	4.7412 (34.20)	-	-	0.0582 (1.63)	-0.1214 (4.08)	-	0.1680
MW/H=(Q/H)	1.6103 (1.32)	-	-	-	-	0.3711 (2.26)	0.0511
800 to 1550 N=121							
MW/H=f(GCA/H, GIA/H)	-6.5371 (4.78)	2.2604 (7.89)	-	-	-	-	0.3377
MW/H=f(GCA/H, F/H)	-6.5371 (4.78)	2.2604 (7.89)	-	-	-	-	0.3377
MW/H=f(GCA/H,F/H, Tr/H)	-6.1973 (4.61)	2.2452 (8.00)	-	0.0726 (2.17)	-0.1062 (2.76)	-	0.3728
MW/H=f(GCA/H, ,GIA/H,F/H, Tr/H)	-7.5406 (4.77)	2.5495 (7.72)	-0.0556 (1.72)	0.1052 (2.75)	-0.1020 (2.67)	-	0.3830
MW/H=(Q/H)	-4.6378 (2.49)	-	-	-	-	1.2673 (4.77)	0.1533

Table: 21(ii)

INTER DISTRICT VARIATION IN LABOUR USE

Double Log Function: 1970's Yield Level Classification

1960's Districts

0-800 N=33	Intercept	GCA/H	GIA/H	F/H	Tr/H	Q/H	$\bar{R}^2$
MW/H=f(GCA/H, GIA/H)	-15.8046 (5.29)	4.1274 (6.44)	0.0714 (3.85)	-	-	-	0.4611
MW/H=f(GCA/H, F/H)	-16.9252 (5.95)	4.3989 (7.21)	-	0.0816 (4.47)	-	-	0.4888
MW/H=f(GCA/H, F/H, Tr/H)	-16.9252 (5.95)	4.3989 (7.21)	-	0.0816 (4.47)	-	-	0.4888
MW/H=f(GCA/H, GIA/H, F/H, Tr/H)	-15.9296 (5.55)	4.1718 (6.77)	0.0379 (1.75)	0.0599 (2.74)	-	-	0.5018
MW/H=f(Q/H)		Insignificant					

INTER DISTRICT VARIATIONS IN LABOUR USE

Table: 21(iii) C ubic Log Function: 1970's Yield Level Classification

1970's District

Above 1550 N=77	Intercept	GCA/H	GIA/H	F/H	Tr/H	Q/H	$\bar{R}^2$
MW/H=f(GCA/H, GIA/H)	4.8186 (40.74)	–	-0.0628 (2.01)	–	–	–	
MW/H=f(GCA/H, F/H)		Insignificant					
MW/H=f(GCA/H, F/H, Tr/H)	1.4753 (1.11)	0.7158 (2.68)	–	0.1585 (3.13).	-0.1863 (6.63)	–	0.3616
MW/H=f(GCA/H, GIA/H, F/H,Tr/H)	1.4753 (1.11)	0.7158 (2.68)	–	0.1585 (3.13)	-0.1863 (6.63)	–	0.3616
MW/H=(Q/H)		Insignificant					
800 to 1550 N=121							
MW=f(GCA/H, GIA/H)	-4.6568 (2.86)	1.8902 (5.56)	–	–	–	–	0.1997
MW=f(GCA/H, F/H)	-4.6568 (2.85)	1.8902 (5.56)	–	–	–	–	0.1997
MW=f(GCA/H,F/H, Tr/H)	-4.6568 (2.85)	1.8902 (5.56)	–	–	–	–	0.1997
MW=f(GCA/H, GIA/H, F/H,Tr/H)	-46568 (2.85)	1.8902 (5.56)	–	–	–	–	0.1997
MW=(Q/H)	-5.2982 (2.92)	–	–	–	–	4.3712 (5.35)	0.1868

Table: 21(iv)

INTER DISTRICT VARIATIONS OF LABOUR USE

Double Log Function: 1970's Yield Level Classification

1970's Districts

0 to 800 N=63	Intercept	GCA/H	GIA/H	F/H	Tr/H	Q/H	$\bar{R}^2$
MW/H=f(GCA/H, GIA/H)	-12.0712 (4.22)	3.3336 (5.45)	0.0841 (3.28)	-	-	-	0.4119
MW/H=f(GCA/H, F/H)	-12.3986 (5.06)	3.4064 (6.50)	-	0.1075 (5.82)	-	-	0.5311
MW/H=f(GCA/H, F/H,Tr/H)	-12.3986 (5.06)	3.4064 (6.50)	-	0.1075 (5.82)	-	-	0.5311
MW/H=f(GCA/H, GIA/H, F/H, Tr/H)	-12.3986 (5.06)	3.4064 (6.50)	-	0.1075 (5.82)	-	-	0.5311
MW/H=(Q/H)		Insignificant					

of relationship between land yield and labour absorption expressed as man land ratio. Similarly, though statistically significant, the results are extremely weak for the mid yield districts in both the periods. Finally, the results are once again insignificant for the low yield districts during bott the periods.

2. However, intensity of cultivation enters as a significant variable with very high partial elasticity along with other input variables like fertilizers and tractors in all the three sets of districts when these inputs are used as a proxy for yield levels. The explanatory power of the model increases with R^{-2} rising to 36 per cent, 20 per cent and 53 per cent for the high, medium and low yield districts respectively during the seventies. More or less similar results hold true for the sixties.

3. As earlier, tractors have a negative elasticity with respect to employment whenever they enter along with other variables. This result conforms to our earlier finding.

On the basis of the above, it can be generally concluded that land yield classification of districts fails to give as meaningful a result regarding the relationship between land yield and labour use as obtained in our earlier analysis based on growth rate classification, where very significant relationship was obtained among these variables for each set of growth districts for both the periods. However, the result improves when input variables like fertilizers, intensity of cultivation, tractors,etc are used as a proxy for yield.

It is, therefore, possible to suggest that the relevant classification for this relationship is differential rates of growth and not yield levels. It appears that the relationship between yield and labour use is not a static, but a dynamic relationship. Yield and labour force do not seem to be related per se, but the growth of labour force seems to be related with growth of output, which in turn is positively

4.7 Direct Introduction of Dynamic Relationship

Although we have insisted above that the relationship between labour absorption and land yield is dynamic, our regression equation is nevertheless based on levels of labour absorption and land yield. Our conclusion about the dynamic relationship is solely based on the classification of 281 districts according to their growth of output or land yield. It is probably better to test the dynamic relationship directly by a reformulation of the model as follows:

$$\left(\frac{MW}{Hect}\right)_{1970} - \left(\frac{MW}{Hect}\right)_{1960} = f\left[\left(\frac{O}{Hect}\right)_{1970} - \left(\frac{O}{Hect}\right)_{1960}\right]$$

We have tested this hypothesis through a linear regression. An attempt to fit in a quadratic function failed as the coefficient for X^2 turned out to be insignificant. The results for a classification of districts according to their growth of out put, and growth of yield and yield levels are presented in Table 6 below.

These results confirm our basic contention that it is the growth of output or yield and not the yield levels that is the main determinant of labour absorption in Indian agriculture.

Thus for the groth of output and growth of yield classificati n the regression coefficients are positive and significant for all the true positive growth catefories of districts. For the negative growth of output districts, the regres ion coefficient is highly insignificant (F level less than 2.5) and hence the variable does not enter the equation For the negative yield districts, the regression coefficient has very low significance (10 per cent level), but has a correct negative sign. This shows that, for these districts even with a fall in yield levels, the labour pressure on

agriculture has tended to increase.

The results for all categories of yield level classification are highly insignificant. Thus our contention that it is the growth of output or growth of yield and not the levels of yield that is the main determinant of labour absorption in Indian agriculture is conclusively established by the above statistical analysis.

Table: 12(i) INTER TEMPORAL CHANGES IN LABOUR UTILISATION

Linior Function: Growth of output classification

Above 3.0 per cent N=100	Intercept (2	O/H	$\bar{R}^2$
$\triangle$(MW/H)=f($\triangle$(IQ/H)	3.4897	0.0220	0.3334
	(2.15)	(7.11)	
1.5 to 3.0 per cent N=72			
$\triangle$(MW/H) =f($\triangle$(IQ/H)	3.9893	0.0548	0.4564
	(2.76)	(7.78)	
0 to 1.5 percent N=45			
$\triangle$(MW/H)=f($\triangle$(IQ/H)	8.1203	0.0627	0.2217
	(5.45)	(3.68)	
less than 0 percent N=64			
$\triangle$(MW/H)=f($\triangle$(IQ/H)	Insignificant		

Table: 22 (ii)

INTER TEMPORAL CHANGES IN LABOUR UTILISATION

Linier function: Growth of Yield classification

Above 3.0 per cent N=74	Intercept	(26)	$\bar{R}^2$
Δ(MW/H)=f(Δ (IQ/H)	4.9648 (2.19)	0.0193 (6.02)	0.2487
1.5 to 3.0 per cent N=71			
Δ (MW/H)=f(Δ(IQ/H)	6.0719 (3.79)	0.0423 (6.49)	0.3700
0 to 1.5 per cent N=68			
Δ (MW/H)=f(Δ (IQ/H)	8.5656 (4.17)	0.0677 (2.82)	0.0939
Less than 0 per cent N=68			
Δ (MW/H)=f(Δ (IQ/H)	8.8876 (6.08)	-0.0146 (1.80)	0.0324
All Districts N=281			
Δ(MW/H)=f(Δ IQ/H)	10.1448 (12.26)	0.0140 (5.80)	0.1045

TECHNOLOGICAL CHANGE AND INTER-REGIONAL VARIATIONS IN AGRICULTURAL PRODUCTIVITY

by

J.P. Singh

The main objective of this paper is to examine the order of influence of some crucial factors of production on inter-regional differences in productivity of land under all crops. The performance of agriculture, in general, and of rice and wheat crops, in particular, would also be examined for individual States. The analysis on the impact of important factors on productivity in agriculture has been done for early sixties and early Seventies. These two periods have been selected mainly because of the availability of certain relevant studies and their suitability to represent pre-HYV and post-HYV periods.

Agricultural Growth

Agricultural production in India has been increasing at the rate of 2.8 percent per annum since the last about three decades.[1] This has also been the magnitude of growth for the period before and after the mid-Sixties. But there has been considerable change in the magnitude of growth components between the two periods. Whereas the growth of areas was more important in the earlier period, the growth of productivity became more important during the latter period. Considerable difference in the rates of growth of output, area and yield of all crops were observed among the States between the period 1962-65 and 1970-73.[2] The growth of yield was observed to be

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1 Government of India, Economic Survey, 1979-80, P.7.

2 G.S. Bhalla and Y.K. Alagh, Performance of Indian Agriculture A District-wise Analysis, Sterling Publishers, 1979.

the main source of output growth in most of the States. Unfortunately, there had been absolute decline in the level of output of Maharashtra, Orissa, and Andhra Pradesh over the period of time. On the other hand, Punjab, Haryana, Jammu and Kashmir, and Rajasthan achieved more than 5 percent annual growth in their crop output. It is noteworthy that except Punjab, other States showing more than 5 percent growth in their output had relatively low level of yield (less than Rs.810 per hectare) in 1962-65. Most of the States having the yield level above Rs.1150 per hectare in the base period showed only moderate rate of growth of output, ranging between 2 - 3 percent.

The production performance of rice and wheat crops would be worth examining, as these are the two most important crops, both in terms of area and production, and have been the major beneficiaries of new technology. Their performance before and after the advent of their high yielding varieties would provide some idea about the impact of new technology on their production. The rates of growth of area, yield and production of rice and wheat, respectively, for pre-HYV and post-HYV periods are presented in Table 1 and Table 2. The years 1965-66 and 1966-67 have been omitted from the analysis because of being abnormal years.

It is clear from Table 1 that the rate of growth of output of rice declined considerably in post-HYV period as compared to pre-HYV period in all the States except Uttar Pradesh and Punjab and Haryana. The rate of growth of yield also declined quite substantially in most of the States except Punjab, Haryana, Uttar Pradesh, Tamil Nadu, Andhra Pradesh and Assam. It is mostly the latter states that have been at the forefront of

adoption of new technology of rice. It is important to note that during both the periods, the rate of growth of yield has been relatively more important than that of area. Except Punjab

Table 1

Compound Growth Rates (Percent) of Area, Yield and Production of Rice

	1954-55 to 1964-65			1967-68 to 1978-79		
	Area	Yield	Production	Area	Yield	Production
Andhra Pradesh	2.896	1.595	4.541	1.725	1.684	3.436
Assam	1.416	-0.479	0.935	-0.682	0-088	0.768
Bihar	1.063	4.911	6.026	0.242	1.284	1.296
Karnataka	2.764	2.080	4.909	-0.423	0.996	0.566
Kerala	0.613	2.300	2.922	-0.383	0.550	0.166
Madhya Pradesh	1.319	0.705	2.037	0.917	0.010	0.889
Tamil Nadu	2.023	1.722	3.156	-0.447	3.079	2.619
Uttar Pradesh	1.826	2.485	4.351	0.855	4.015	4.902
West Bengal	0.678	1.763	2.441	0.632	0.700	1.340
Orissa	1.345	7.823	9.283	0.076	-0.476	-0.403
All India	1.681	2.532	4.255	0.786	1.770	2.579
Haryana & Punjab	4.285	3.218	7.625	8.587	7.558	16.791
Punjab				10.289	8.266	18.978
Haryana				5.595	6.664	12.628

Source : Hakim Singh, S.D. Bokil, and Dinesh Singh, "Growth of Rice Production in India - Progress and Prospects", Agricultural Situation in India, August, 1981.

and Haryana, the rate of growth of area declined substantially in all the States during the post-HYV period. In Assam, Karnataka, Kerala, and Tamil Nadu, there had been absolute decline in area under rice during the post-HYV period. The rate of growth of yield had been quite impressive (more than 3 percent) in Punjab, Haryana, Uttar Pradesh and Tamil Nadu.

It is important to note from Table 2 that rate of growth of output of wheat increased substantially in post-HYV period as compared to pre-HYV period in all the States except Punjab and Haryana and Madhya Pradesh. The decline inthe rate of growth of output has been due to decline in the rate of growth of yield in Punjab and Haryana but due to decline in growth rate of area in Madhya Pradesh. The regional differences in the growth of production have been remarkably higher during the post-HYV period, as it varied from 2.86 percent in Madhya Pradesh to 21.59 percent

Table 2

Compound Growth Rates (Percent) of Area, Yield and Production of Wheat for Pre-HYV and Post-HYV Period

	1954-55 to 1964-65			1967-68 to 1977-78		
	Area	Yield	Production	Area	Yield	Production
Uttar Pradesh	0.314	1.100	1.417	2.640	1.392	4.068
Punjab and Haryana	2.441	2.925	5.438	3.287	1.653	4.995
Madhya Pradesh	2.925	1.467	3.938	0.658	2.187	2.859
Bihar	1.043	2.866	4.535	6.724	2.900	9.819
Rajasthan	1.781	-0.069	1.081	4.310	2.772	7.201
West Bengal	-3.836	1.291	-2.594	16.732	4.159	21.587
Gujarat	-0.283	3.816	3.522	2.885	3.558	6.545
Other Areas	1.050	2.338	3.411	2.813	4.233	7.165
All India	1.441	1.278	3.079	3.100	2.276	5.446

Source : Hakim Singh and S.D. Bokil, "Trend of Production of Wheat in Pre-HYV and Post-HYV periods", Agricultural Situation in India, October, 1980.

per annum in West Bengal. In most of the States, there had been a substantial step up in the rate of growth of both area and yield in post-HYV period. In Uttar Pradesh, Punjab and Haryana, Bihar, Rajasthan and West Bengal, rate of growth of area was much more important than that of yield. But substantially high growth rate in yield in most of the States had been mainly

responsible for the fast increase in area under wheat crop. In most of the States, the rate of growth of yield had been more than 2 percent per annum.

Factors Influencing Agricultural Productivity

It is an accepted fact that the long-term growth in agricultural production would have to be sustained mainly through the increase in productivity of inputs and their intensive use. In this process technological change, which is embodied in capital and knowledge inputs would have to play the major role. It has been roughly estimated that the contribution of growth of capital and knowledge inputs to the total growth of agricultural output in India (between 1960-61 and 1970-71) was as high as 63 percent, whearas that of land and labour was only 37 percent.[3] It has also been observed for a district of Punjab that with the same level of input of labour, fertilizer and capital services per acre, 15 percent more output could be obtained from Mexican wheat as compared to the local wheat. The new production technology of wheat contributed further about 25 per-cent of increased output owing to increased use of labour, fertilizer and capital services per acre.[4] The decomposition of growth of productivity in agriculture into changes in cropping pattern, locational shifts of area under individual crops, and pure yield effect indicate that the growth of productivity during the fifties was mainly due to cropping pattern effect and location shift effect while that in Sixties was mainly due to pure yield effect, for which, technological change was the main influencing factor.[5]

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3 C.H. Hanumantha Rao, Technological Change and Distribution of Gains in Indian Agriculture, Macmillan, 1976, P.5.

4 S. Bisaliah, "Decomposition Analysis of Output Change Using New Production Technology in Wheat Farming : Some Implications to Returns on Research Investment", Indian Journal of Agricultural Economics, Vol. XXXII, July-Sept., 1977, pp. 193-201.

5 Dharam Narain, "Growth of Productivity in Indian Agriculture", Indian Journal of Agricultural Economics, Vol. XXXII, July-September, 1977.

responsible for the fast increase in area under wheat crop. In most of the States, the rate of growth of yield had been more than 2 percent per annum.

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3 C.H. Hanumantha Rao, Technological Change and Distribution of Gains in Indian Agriculture, Macmillan, 1976, P.5.

4 S. Bisaliah, "Decomposition Analysis of Output Change Using New Production Technology in Wheat Farming : Some Implications to Returns on Research Investment", Indian Journal of Agricultural Economics, Vol. XXXII, July-Sept., 1977, pp. 193-201.

5 Dharam Narain, "Growth of Productivity in Indian Agriculture", Indian Journal of Agricultural Economics, Vol. XXXII, July-September, 1977.

Irrigation, fertilizer and high yielding varieties of seeds are the most important factors that are associated with technological change and that have major influence on the productivity of land. Among these factors, irrigation not only increases the output by pushing up the productivity of land, in general, but also by influencing adoption of new technology, particularly biological-chemical type by increasing crop intensity, by bringing shifts in cropping pattern towards high value crops, and by reducing risk in crop production. The irrigation is a basic factor of production which influences the use of fertilizer and high yielding varieties. However, definite evidences on the contribution of these inputs to productivity are quite scarce. Some relevant information on this issue are presented in the following pages.

A study by Ranade[6] using data for 54 agro-coimatic regions of India, in which he regressed value of agricultural output per hectare on cropping pattern index, fertilizer and irrigation for two periods, 1962-65 and 1970-73, indicates that coefficients of all the three variables are positive and highly significant in both linear and log-linear functions. In another study, Joshi and Haque[7] worked out contribution of fertilizer, irrigation, HYV and credit to per hectare agricultural output by fitting log-linear function and using inter-state cross section data for the year 1973-74 to 1975-76. The reason for presenting their results along with those of Ranade is that the coefficients of common variables in two studies are remarkably close. However, Joshi and Haque have not presented t - values or standard errors

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6 C.G. Ranade, "Impact of cropping Pattern on Agricultural Production", Indian Journal of Agricultural Economics, Vol. XXXV, No. 2, April-June, 1980, pp. 85-93.

7 P.K. Joshi and T. Haque, "An Economic Enquiry into the Long-Term Prospects of Balanced Agricultural Growth in India", Indian Journal of Agricultural Economics, Vol. XXXV, October-December, 1980, pp. 1-8.

of their coefficients and hence it is difficult to know the level of significance of their elasticity coefficients. In view of the closeness of their coefficients of fertilizer and irrigation to those of Ranade, we guess that their coefficients of fertilizer, irrigation and high yielding varieties are significant. Looking at the magnitude, we guess that their coefficient of credit is not significant, nor do we expect it to be significant on logical grounds. As such credit is not an input, but it could be used for purchasing any factor of production. Hence it should have not been used as an explanatory variable when relevant factors of production are included in the regression. In spite of these drawbacks, we wish to use their results because of our interest in their coefficient of high yielding varieties and in providing support to the results of Ranade.

The elasticity coefficients of yield functions are presented in Table 3. The magnitude of elasticity coefficient of fertilizer remained constant around 0.13 in both early Sixties and early Seventies whereas that of irrigation increased from 0.08 to 0.10 and that of cropping pattern index increased from 0.92 to 1.14. The elasticity coefficient of high yielding varieties was about 0.15 for mid-Seventies. The magnitude and the level of significance of coefficients provide enough evidence regarding the impact of these factors on inter-regional variation in the productivity of land. context, the index of cropping pattern stands to be the ortant. But the possibility of improving cropping pattern index appears to be low as the percentage of total cropped area under most of the high value crops except wheat has either remained constant or declined marginally. Among the important factors of production included in the regressions as explanatory variables, the magnitude of the coefficients of fertilizer and HYVs are almost equal, whereas that of irrigation is lower than them. But before ranking them in the order of their importance, it would be better to look into some more evidence.

Table 3

Yield Regressions for All India

(Functional Form : Double log)

Period	Constant	Explanatory Variables: Fertilizer	Irrigation	Cropping Pattern Index	HYVs	Credit	R^2	F-Value
			Ranade@					
1962-65	0.29 (0.49)	0.13 (4.86)*	0.08 (3.18)*	0.92 (10.01)*	-	-	0.90	134.46*
1970-73	-1.57 (2.13)**	0.14 (4.02)**	0.10 (2.86)*	1.14 (10.34)*	-	-	0.81	69.94*
			Joshi and Haque+					
1973-76	3.4102	0.1237	0.1075	-	0.1472	0.0190		

@ 1. Figures in parentheses are t-values.

2. Fertilizer is in kilogram per hectare.

3. Irrigation is the percentage irrigated gross cropped area in total cropped area.

4. Cropping pattern index $= \dfrac{\sum_{i=1} (a_{ij} \; Y_i P_i)}{\sum_{i=1} a_{ij}} \Big/ \dfrac{\sum_{i=1} (A_i)}{\sum_{i=1} (A_i Y_i P_i)}$

where a_{ij} = area under the i^{th} crop in j^{th} region;
Y = all India average yield of the i^{th} crop,
P_i = all India price of the i^{th} crop, and
A_i = all India area under i^{th} crop.

5. Total number of observations for 1962-65 and 1970-73 are 47 and 54 respectively.

\+ Fertilizer and credit are measured in terms of per hectare use, whereas HYVs and irrigation stand for percentage area under high yielding varieties and irrigation.

* Significant at 5% level.

** Significant at 10% level.

In an attempt to identify the relative role of various factors in determining growth rate of agricultural productivity in each State by using data for 1955-56 to 1976-77, it was observed that out of 15 States, the elasticity coefficients were positive and significant (at the probability level of 10 percent) in 11 States for fertilizer, in 7 States for area under HYV and in 4 States for area under irrigation.[8] Further, 6 out of 7 States having significant coefficients for HYVs also had significant coefficient for fertilizer, implying that these two inputs would have compound effect on the growth of productivity per hectare of all crops when used together. In another study, pertaining to the year 1971-72, in which yield level of 9 important crops as well as aggregate agricultural output (per hectare) in each of the 57 selected homogeneous agro-climatic regions was regressed on fertilizer consumption, irrigation ratio and Gini ratio of distribution of owned land, fertilizer was found to be the most important factor explaining productivity of land.[9] Further, the magnitude of correlation coefficient between yield and fertilizer increased over the time period, whereas that between yield and irrigation declined.[10] While taking an over all view of the above facts, we are inclined to rank fertilizer, HYV, and irrigation in the order of their importance in explaining inter-regional variation in agricultural productivity. This also gets support from the facts that the increase in percentage area irrigated to total cropped area has been much slower than that in the case of fertilizer per hectare and that in percentage area under HYV to total cropped area.

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8 Joshi and Haque, "An Economic Enquiry into the Long-Term Prospects of Balanced Agricultural Growth in India", op.,cit.

9 V.S. Vyas, "Some Aspects of Structural Change in Indian Agriculture", Indian Journal of Agricultural Economics, Vol. XXXIV, January-March, 1979, pp. 1-8.

10 C.G. Ranade, "Impact of Cropping Pattern on Agricultural Production", Indian Journal of Agricultural Economics, op. cit.

Working Paper No.166

RURAL RESOURCES GENERATION AND MOBILISATION

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March 15, 1983

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	Abbreviations	

The Indian savings rate grew impressively over the three decades between the early 1950s and the end of the 1970s. Gross savings as a proportion of gross domestic production (GDP) increased from less than 10 per cent in the early 1950s to about 22 per cent towards the close of the 1970s.

All sectors of the economy did not, however, participate equally in contributing to the increased savings rate. For social accounting purposes, the Indian economy is coventionally divided into three sectors: the public sector, the private corporate sector and a residual, "household" sector. The significant stepping up of the Indian savings rate was made possible principally by the remarkable savings performance of the household sector. This sector's savings as a proportion of GDP increased from less than 7 per cent in the early 1950s to more than 18 per cent in the late 1970s. In contrast, over the same period public sector savings as a proportion of GDP increased from 2 per cent to about 5 per cent and private corporate savings increased barely from 1 to 1½ per cent.

Savings may be used to acquire either physical assets or financial assets. Even in the late 1970s, physical assets were the dominant form of household savings. However, the rapid increase in household savings over the past three decades took place mainly in financial savings. The share of physical assets formation in household savings was more than four-fifths in the early 1950s. The share declined to about three-fifths by the end of the 1970s.

When "households" save in financial assets, they in effect

lend resources to the other sectors and hence finance investment in those sectors. Financial savings of households were about 1 per cent of GDP in the early 1950s, between 3 and 4 per cent in the 1960s and rose sharply in the 1970s reaching about 7 per cent towards the end of that decade. Thus, in the late 1970s, households were transferring about 7 per cent of GDP for financing investment in the public and private corporate sectors.

The Sixth Five Year Plan (covering the period 1980-1985) visualises an increase in aggregate savings rate to nearly a quarter of domestic product by 1984-85. The Plan aims at stepping up the savings rate in the public and private corporate sectors, particularly in the former. If the projections are realised, the share of public sector savings in aggregate savings will increase from 17 per cent in 1979-80 to 25 per cent in 1984-85, the share of the private corporate sector will increase from 7 to 8 per cent, whereas the share of the household sector will fall from about three quarters to about two-thirds. However, given the present weight of the household sector in total savings, reaching a savings rate of 25 per cent would require, even according to the Plan, a stepping up of the savings rate in the household sector. Close to half the increase in household savings, it is hoped, will take the form of financial assets. Thus, according to the Plan targets, the household sector would transfer about 8 per-cent of GDP to other sectors by 1984-85.

Household savings, therefore, have been and, in the foreseeable future, will continue to be of critical importance to physical

assets formation in the Indian economy. Not only do the "households" undertake almost half the aggregate physical investment, but through transferring savings they make possible greater investment in the public and private corporate sectors. The behaviour of "household" savings will to a large extent determine whether the Sixth Plan investment targets are achieved or not. This is likely to be particularly so if the ambitious public sector savings targets are not achieved.

The determinants of both the households savings rate and the savings pattern need, therefore, to be carefully understood. In doing so, the first step is to recognise the heterogenity of the so-called household sector. This sector, it will be recalled, is essentially a residual sector. The sector comprises of all economic agents and organisations other than those accounted for by the public sector and the private corporate sector. As such, besides pure households, all unincorporated business enterprises are included in the household sector.

One segment of the household sector with some degree of homogenity is the rural sector. Rural areas are those with a limited population size and relatively low population density, and where more than three-quarters of the workforce is engaged in agriculture.*

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* In actual practice, the rural sector is defined in a negative manner. Urban areas are those with municipalities, civil lines, cantonments etc. and those with: (a) population size exceeding 5,000, (b) population density exceeding 400 person per square Km and (c) less than three quarters of the workforce engaged in agriculture.

The importance of the rural sector to the Indian economy is, ofcourse, well known. About 75 per cent of the Indian population is located in the rural areas. Almost two-thirds of national income is generated in the rural areas. Above all, agricultural production, dominant not just in terms of income generated and numbers employed but critical also in setting limits to the growth of other sectors, is almost entirely a rural activity.

In this paper, we examine savings generation and deployment in the rural sector. We examine the level and determinants of investment within the rural sector as well as the flow of resources to and from the sector in the form of financial liabilities and assets.

As far as possible, rural aggregates have been broken up to provide estimates for agricultural and non-agricultural households. Separate study of savings behaviour of agricultural households is important both for understanding the dynamics of Indian agriculture and for situating the Indian experience in the debate on agriculture's resource contribution in the initial stages of industrialisation. Separate treatment of agriculture is required because despite agriculture's dominance, rural aggregates sometimes give a picuture very different from that relating only to agricultural households.

The main theme that emerges is that there is no clear evidence of an increase in rural or agricultural savings rates, but there is considerable evidence of a change in the pattern of savings, i.e. in asset preference. There have been shifts in preference between financial and physical assets, and also between the components of

both groups of assets.

The paper is organised as follows:

All-India aggregate rural savings and savings rates over 1961-62 to 1978-79 are presented in section 1. All-India financial flows in the rural sector over the same period are described in section 2. The regional dimensions are explored through an inter state comparison of rural savings and financial flows in section 3, the complete enumeration of physical and financial flows is attempted only for 1971-72; some important components of financial flows are, however, considered for earlier and later years. In section 4, the determinants of physical investment in agriculture are sketched. In the concluding section, the determinants of agricultural savings and the relationship between physical investment and net financial flows are enumerated. On that basis, the Sixth Plan targets of irrigation, household savings and institutional credit to agriculture are assessed.

Section 1: Aggregate savings: all India, time series

We have estimated aggregate savings in the rural sector and also the rural savings rates for the period 1961-62 to 1978-79. In this section we present these estimates and highlight some features of interest.

The aggregate savings of the agricultural (A) sector, the non-agricultural rural (NAR) sector and the entire rural (R) sector are shown in Table 1. All savings reported here are gross savings, i.e., no attempt has been made to account for depreciation. The physical and

financial components of rural savings were independently estimated. The estimation details are given in Appendices 1 and 2. In our discussion in the main text, we shall refer only to those aspects of the estimation procedure which are of relevance for interpreting the estimates. The physical investment figures for 1961-62 and 1971-72 were obtained from RBI's Debt and Investment Surveys. Physical investment expenditure is here taken to be the gross capital expenditure reported in the Surveys minus expenditure on purchase of land and land rights. It includes expenditure on purchase of livestock and durable household assets, but does not include accumulation of inventories. The physical investment estimates for years other than 1961-62 and 1971-72 were obtained by assuming a constant growth rate. (For the comparability of the 1961-62 and 1971-72 estimates, see Appendix 1).

The corresponding savings rates are also shown in Table 1. These rates measure the proportion of savings to income generated in that sector. The income generated in agriculture was obtained from CSO's National Accounts Statistics. Rural income was assumed to be [illegible] indicated by the CSO in an estimate made for 1970-71 (see [illegible] National Accounts Statistics, 19[illegible] Appendix Table A.1.1). The NAR income was derived as the difference between the rural and agricultural incomes.

From Table 1, the following features of the rural savings rate emerge:

1) Aggregate savings rate

The rural savings rate has on an average been around 8 per cent. At this level, the rural rate has been significantly lower than the all-India rate.

Table 1: Rural Savings

Gross aggregate savings (Rs. crores)			Savings rate[1]		
Agricultural households	Non-agricultural households	All rural households	Agricultural households	Non-agricultural households	All rural households
1	2	3	4	5	6
871	125	996	0.13	0.06	0.11
946	146	1092	0.13	0.06	0.12
1010	159	1169	0.12	0.06	0.11
1074	153	1227	0.11	0.05	0.09
1133	178	1311	0.12	0.06	0.10
1173	157	1330	0.10	0.04	0.09
1253	193	1446	0.09	0.04	0.08
1290	221	1511	0.09	0.05	0.08
1365	246	1611	0.09	0.05	0.08
1542	250	1792	0.09	0.05	0.08
1634	265	1899	0.09	0.05	0.08
1782	314	2096	0.09	0.05	0.08
2115	324	2439	0.08	0.04	0.07
1923	320	2243	0.07	0.04	0.06
2259	394	2653	0.09	0.05	0.08
2335	569	2904	0.08	0.06	0.08
2630	544	3174	0.08	0.05	0.08
3078	572	3650	0.10	0.06	0.09

[1] The savings rate has been estimated by dividing the aggregate savings by relevant income. Rural income was assumed to be 1.325 times agricultural income as indicated by CSO, National Accounts Statistics, 1981 Appendix Table A.1.1.

Sources: 1) Appendices 1 and 2; and Appendix Table VIII
2) CSO, National Accounts statistics, various issues.

2) Difference between A and NAR households

Our estimates show that the savings rate of A households has been around 10 per cent and the savings rate of NAR households has been around 6 per cent. The difference between the two rates is overstated here on account of the estimation procedure.* It is, however, likely that the A rate will be seen as higher than the NAR rate even when the estimation bias is adjusted for.

3) Trends over time

It appears that the savings rate of A households fell sightly in the mid-1960s and has remained steady since then. The savings rate of NAR households has remained almost unchanged. Thus, not only has the rural savings rate been lower than the all-India rate, it has also shown no tendency to increase during a period which saw impressive growth in the all-India rate.**

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* In deriving the savings rate, the aggregate savings of A households, which also engage in non-farm activity, was divided only by agricultural income. Thus the savings rate of A households is overstated. On the other hand, the estimated NAR income, which is derived as a residual, is an overestimate, and the NAR savings rate is, therefore, an underestimate.

** The rural-all-India comparisons must be cautiously interpreted. The difference between the rural and all-India rates (at a point of time and in the trends) is probably exaggerated. The all-India estimates are prepared by the CSO. The available evidence suggests that the CSO's estimates of physical investment in the "household" sector are considerably overstated. These estimates are in general based on the RBI's Debt and Investment Survey of 1961-62 and are moved forward each year by some composite index of income, population, area sown etc. The extent of increase in investment shown by this method is not borne out by the 1971-72 Survey (See Rao and Rao, 1982). There is no reason to consider one Survey superior to the other. As discussed in Appendix 1, the RBI considers the two Surveys completely comparable. Thus our estimates of physical investment in agriculture are not strictly comparable to the CSO's household investment estimates and hence to CSO' aggregate savings and investment estimates.

The fall in savings rate in the mid-1960s was due probably to the extremely low level of agricultural production during 1965-66 and 1966-67. The fall was specially sharp in the case of financial savings, and there was, infact, a significant net inflow of financial resources into agricultural households via institutional credit agencies during the second half of the 1960s (we discuss this below in greater detail).

The failure of the savings rate to revive in the 1970s despite the rapid growth of financial savings (as discussed below) was due mainly to the continued sluggishness of physical investment. Of course, our investment figures are based on the assumption of a constant growth rate that prevailed during the 1960s. It could, therefore, be objected that the sluggishness in the 1970s is built into our estimates. However, the limited available evidence from the Livestock Censuses of 1977 and earlier years also does not indicate any acceleration of investment in the 1970s. As we shall discuss in Section 4, there seem reasons to believe that fixed investment in agriculture has indeed grown slowly.

Also, our physical investment estimates do not include working capital investment. Though physical fixed investment has grown slowly, investment in working capital has increased very rapidly, the growth has been particularly sharp in the addition to current material inputs, from about Rs.100-150 crores annually in the second half of 1960s to about Rs.200-300 crores annually in the 1970s. However, despite the rapid growth, the increase in current material inputs continues to form a small part of total investment and less than 1 per cent of income. It inclusion in our savings estimates will not, therefore, affect the observation that the savings rate has not grown. (For the details of working capital computation, see Appendix 3.)

The savings rate is influenced by several factors. Here it may be noted that the lack of growth in savings rate is consistent with a rural per capita real income that has remained stationary (see Table 2). Other variables that influence the savings rate are considered in Section 3 and 4.

Section 2: Financial savings: All India, time series

In this section, we discuss: (1) the magnitude of rural net financial savings; (2) the changes in composition of rural financial assets and liabilities; (3) the relationship between rural net financial savings and rural physical investment; (4) the share of rural financial savings in total "household" savings and (5) the relationship between "formal" and "informal" financial assets in the rural sector.

1) Net financial savings

As indicated above, there have been important changes in rural financial savings, and these have significant implications for rural resource mobilisation. The estimates of rural net financial savings are presented in Table 3.

In estimating the net financial savings, the annual acquisition of financial assets and liabilities was separately computed. Only formal (or external) financial assets and liabilities were considered. These are assets and liabilities that involve transactions with institutional agencies. They are distinguished from informal (or internal) borrowing and lending, which cancel out within the sector and hence do

Table 2: Rural per capita income trends

Years	Index of per capital income (current prices) (1961-62 = 100)	Agricultural labourers' consumer price index (1960-61 = 100)
1960-61	-	100
1961-62	100	-
1962-63	100	
1963-64	114	
1964-65	137	
1965-66	130	169
1966-67	152	
1967-68	185	
1968-69	177	
1969-70	190	
1970-71	201	206
1971-72	204	215
1972-73	220	
1973-74	291	313
1974-75	315	413
1975-76	285	345
1976-77	300	324
1977-78	338	349
1978-79	330	340

Sources: 1. CSO National Accounts Statistics, various issues.
2. CSO Ststistical Abstracts of India.

not count in the estimation of the sector's net savings. The financial assets thus considered were: currency, life insurance premia, provident fund contributions, small savings, commercial bank deposits and co-operative shares and deposits. The sources of financial liabilities considered were commercial banks, co-operatives and the government. Net financial savings in any year were estimated as the difference between the assets acquired and the liabilities incurred. Positive net financial savings indicate a net lending of resources by the sector and negative net financial savings indicate a net inflow of resources into the sector.

Table 3 shows that there was a net inflow of resources into agricultural (A) households in the 1960s, particularly in the second half of that decade.* However, the direction of resource flow changed quite dramatically in the 1970s. The resource outflow from A households in the 1970s fluctuated from year to year but showed an overall increasing trend.

In contrast, NAR households have been net financial savers right through. The magnitude of NAR net financial saving in the 1960s

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* The net inflow computed here is less than that computed in an earlier exercise (Mody, 1981). The difference arises because lending to agricultural households by professional money lenders and traders, which was earlier considered an inflow into agriculture, is here not included as a net inflow.

Table 2: Rural financial savings and physical investment

	Net financial savings (Rs. crores)			Net financial savings / Gross physical investment		
	A Sector	NAR Sector	R Sector	A Sector	NAR Sector	R Sector
1961-62	- 21.73	45.34	23.61	- 0.02	0.57	0.02
62-63	- 1.73	61.84	60.11	- 0.00	0.74	0.06
63-64	3.86	68.90	72.76	0.00	0.77	0.07
64-65	5.90	56.85	62.75	0.00	0.59	0.05
65-66	- 0.64	75.27	74.63	- 0.00	0.74	0.06
66-67	- 30.82	48.74	17.92	- 0.03	0.45	0.01
67-68	- 25.45	77.15	51.70	- 0.02	0.67	0.04
68-69	- 67.00	98.16	31.16	- 0.05	0.80	0.02
69-70	- 74.75	113.78	39.03	- 0.05	0.86	0.02
70-71	13.07	109.58	122.65	0.01	0.78	0.07
71-72	10.05	116.16	126.21	0.01	0.80	0.07
72-73	57.55	156.39	213.94	0.03	0.99	0.11
73-74	284.48	155.39	439.87	0.16	0.92	0.22
74-75	- 19.75	140.13	120.38	- 0.01	0.78	0.06
75-76	197.32	201.61	398.93	0.10	1.05	0.18
76-77	145.16	364.53	509.69	0.07	1.79	0.21
77-78	304.92	327.45	632.37	0.13	1.51	0.25
78-79	609.99	340.01	950.00	0.25	1.47	0.35

Note: 1) A negative sign indicates net inflow of financial resources into the sector.

2) A: agricultural, NAR: non-agricultural rural, R: rural

Source: Appendices 1 and 2.

was greater than the deficit of A households, so that there was a net savings outflow from the rural sector even when there was a savings inflow into the agricultural sector.

NAR financial savings have grown steadily right through. In the 1970s, however, it is the A households (which were deficit in the 1960s) that increased their financial savings at the more rapid rate.

Before seeing the financial flows in relation to other relevant magnitudes, it would be useful to take a closer look at the components of these flows.

2) Financial flows - a disaggregated picture

We examine here the instruments and agencies through which the rural financial flows have been mediated. On the assets side, the most significant change has taken place in commercial bank deposits (see Table 4). The share of commercial bank deposits in rural financial assets was 6 per cent in the early 1960s and rose to over 30 per cent in the late 1970s. The shares of all other assets have fallen. However, it must be noted that even the instruments with falling shares show significantly rising absolute magnitudes.

A point of difference between A and NAR households may be noted. Though both groups show the same basic trends in the composition of assets as outlined above, the share of provident fund contributions in A household savings has always been lower and the share of co-operative shares and deposits has always been higher than the corresponding shares for NAR households.

Table 4: Composition of formal financial savings (per cent)

Years	Currency	Life insu-rance	P.F. etc.	Small savings and "others"	Co-op. shares and dep.	Comm. bank dep.	Total
				RURAL			
1961-62	25	16	31	0	18	6	100
1962-63	33	15	30	0	14	6	100
1963-64	35	13	26	1	16	7	100
1971-72	24	11	22	6	12	21	100
1972-73	28	10	19	8	14	19	100
1973-74	33	11	21	11	9	13	100
1976-77	27	9	18	5	12	27	100
1977-78	15	9	18	5	11	39	100
1978-79	22	7	15	5	12	34	100
				AGRICULTURAL			
1961-62	23	16	24	1	30	6	100
1962-63	32	16	23	-1	23	6	100
1963-64	33	13	20	1	26	7	100
1971-72	27	10	15	7	18	23	100
1972-73	30	9	13	8	20	21	100
1973-74	32	9	13	10	12	23	100
1976-77	29	8	12	5	17	30	100
1977-78	15	8	12	6	16	40	100
1978-79	23	7	10	5	17	35	100

Source: Appendix 2.

On the credit side, it will be seen from Table 5 that the large net inflow into the agricultural sector in the second half of the 1960s came mainly from the co-operatives. In the 1970s, the net inflow from the co-operatives has not grown and has, infact, probably fallen. At the same time, though commercial bank credit to agriculture has grown rapidly, the equally rapid increase in commercial bank deposits has meant that commercial banks have throughout been a net recepient of resources from the agricultural and rural sectors. The net flow to commercial banks has probably increased in the 1970s. There has also been no significant increase in government credit to agriculture.

Thus, while the main institution credit agencies have not been increasing the annual net financial inflow into agriculture to any significant extent, savings in the form of currency, life insurance premia and provident fund contributions have been growing, leading to an increasing net outflow of financial resource from the rural sector.

To gain some perspective on these rural "formal" financial flows, we examine them below in relation to rural physical investment, aggregate "household" sector financial savings and "informal" financial savings.

3) Net financial savings and physical investment

a) Agricultural households

Referring back to Table 3, it will noted that till the early 1970s net financial savings of agricultural households were less than

Table 5: Net financial flow to institutional credit agencies (Rs. crores)

Years	Commercial banks		Co-operatives	Government
	Rural	Agricultural		
1961-62	3.82	2.87	- 32.51	- 45
1962-63	4.73	3.76	- 32.51	- 48
1963-64	6.82	4.89	- 38.04	- 57
1964-65	6.16	6.28	- 19.27	- 55
1965-66	8.76	8.36	- 64.11	- 61
1966-67	10.91	10.66	- 59.27	- 68
1967-68	12.89	13.73	- 70.01	- 74
1968-69	15.50	17.59	-148.69	- 80
1969-70	18.48	14.46	-171.22	- 87
1970-71	21.85	36.54	-127.59	- 93
1971-72	25.52	36.06	-153.68	- 99
1972-73	29.39	42.40	-131.18	-177
1973-74	6.24	53.46	- 71.65	- 91
1974-75	-16.94	-24.58	- 89.27	- 78
1975-76	17.94	12.66	- 51.27	- 82
1976-77	35.57	85.60	-266.48	- 86
1977-78	104.23	9.86	-126.08	- 98
1978-79	-4.52	26.78	- 65.24	-119

Source: Appendix 2

5 per cent of investment in physical assets formation. In the early 1960s and early 1970s, in particular, net financial savings were negligible. In the second half of the 1960s, the net saving inflow into agriculture touched 5 per cent of physical investment in agriculture and was, therefore, of some significance in financing private agricultural investment. From the point of view of the non-agricultural sector, however, the savings transfer was negligible right through to the early 1970s, and even in years of high savings inflow into agriculture, the net inflow was 1 per cent or less of physical investment in the non-agricultural sector.*

Since the early 1970s, however, the net financial outflow from agriculture has grown significantly, and in 1978-79 formed 25 per cent of physical investment in that sector (and roughly 2 per cent of the sector's income). In 1978-79, in fact, agriculture's net financial savings had grown appreciably even in relation to non-agricultural investment, constituting about 3 per cent of such investment.*

b) Non-agricultural (NAR) households

Relative to A households, NAR households have always had a greater preference for financial savings. This preference (as in A households) has increased over time. In the early 1960s, NAR households' financial savings formed between half and three quarters of their physical investment. But by the late 1970s, financial investment was one and a half times physical investment (and roughly 4 per cent of NAR income).

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* Using the CSO investment estimates.

The net financial savings of NAR households have not been negligible even in relation to non-rural investment. Since an exact measure of non-rural investment is not available,* we use non-agricultural investment as a proxy. In the 1970s, net financial savings of NAR households have been between 1½ and 2 per cent of non-agricultural investment.

4) Rural and "household" financial savings

Given the large increase in rural financial savings, it is of interest to enquire how rural financial savings trends compare with trends in financial savings of the entire household sector. We look into this question here.

Table 6 presents the relevant figures. We are here still discussing only "formal" financial savings. It will noted that gross rural financial savings (i.e., the total acquisition of financial assets) as a proportion of gross "household" financial savings has changed very little over time. The proportion has moved within the narrow range of one-fifth and one-fourth. However, the lack of change in the aggregate conceals disparate trends in the components. Rural currency acquisition, of course, has been assumed to be a constant one-third of household currency acquisition. The share of rural households in life insurance premia declined in the 1970s according to indicators reported in the LIC Annual Reports (see Appendix 2). The share in provident fund contributions has also fallen over time.

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* Our estimates & CSO estimates are not comparable.

Table 4: Rural and "household" financial savings

Year	Gross R / Gross HH	Gross A / Gross HH	Gross A / Gross R	Net R / Net HH	Net A / Net HH	Net A / Net R
	1	2	3	4	5	6
1961-62	0.20	0.13	0.63	0.05	-0.04	-0.92
62-63	0.23	0.14	0.62	0.12	-0 03	-0.03
63-64	0.20	0.13	0.64	0.10	0.01	0.05
64-65	0.21	0.14	0.66	0.09	0.01	-0.09
65-66	0.23	0.16	0.67	0.09	0.00	-0.01
66-67	0.19	0.13	0.71	0.02	-0.04	-1.72
67-68	0.24	0.17	0.68	0.06	-0.03	-0.49
68-69	0.27	0.18	0.67	0.04	-0.08	-2.15
69-70	0.26	0.18	0.67	0.05	-0.09	-1.92
70-71	0.24	0.17	0.69	0.09	0.01	0.11
71-72	0 23	0.16	0.71	0.08	0.01	0.08
72-73	0.25	0.1	0.73	0.09	0.02	0.27
73-74	0.21	0.17	0.71	0.13	0.10	0.65
74-75	0.18	0.13	0.71	0.05	-0.01	-0.16
75-76	0.20	0.15	0.73	0.11	0.05	0.49
76-77	0.20	0.15	0.73	0.10	0.03	0.28
77-78	0.22	0.16	0.76	0.12	0.06	0.48
78-79	0.23	0.17	0.75	0.14	0.09	0.64

Sources: 1) Appendix 2

2) RBI Report on currency and Finance, various issues, see also Appendix Table VII

Balancing these, the share of rural households in commercial bank deposits has increased significantly.

It will be noted from Table 6 column (3) that the share of agricultural households in rural financial savings has increased over time, and hence though the rural share in all household savings has remained steady, the agricultural share has slightly increased.

The share of rural households in net household savings (gross savings net of credit taken) fell in the seond half of the 1960s as credit inflow into agriculture increased; the share returned to the old level in the early 1970s and even slightly exceeded that level by the end of the 1970s. Thus, in the late 1970s, about 15 per cent of net household savings came from rural households (see Table 6, column (4)). The increased share of rural households in the 1970s reflected principally the increased financial savings of agricultural households which increased their share in rural as well as all "households" net savings.

5) "Formal" and "informal" financial savings

Considerable investment activity takes place within the rural sector which does not show up as investment of the sector as a whole because it is balanced by an internal disinvestment. Thus, money lending within the rural sector creates simultaneously an equal financial asset and liability, creating no net asset for the sector. Similarly, land purchases within the sector involve investment by one party and an equal disinvestment by another.

We compare here the trends in "formal" financial saving and informal investment activity. We estimate informal financial savings by aggregating the debt owed by rural households to non-institutional agencies as reported in RBI's Debt and Investment Surveys. It is assumed that these non-institutional agencies are located within the rural sector and hence corresponding to the debt there are financial assets held in the rural sector. This procedure had to be adopted because, typically, informal lending is understated. For the details of estimation, see Appendix 2.

In Table 7, informal financial saving is shown as a proportion of gross formal financial saving. It may be seen that the proportion has declined during the last two decades.

Table 7 : Rural "informal" savings.

	Informal financial savings as a ratio of formal gross financial savings	Expenditure on purchase of land as a ratio of gross formal financial savings.
1961-62	0.64	0.95
1971-72	0.26	0.40

Sources : 1) Appendix 2
2) RBI All India Debt and Investment Survey, 1971-72.

It also appears from Table 7 that gross formal financial saving has risen faster than expenditure on purchase of land.

Section 3 : Aggregate savings and financial flows - State wise

1) Aggregate savings

The state wise aggregate savings rates of agricultural households in 1971-72 are shown in Table 8. Only agricultural households have been considered because state wise data on rural incomes was not readily available.* The savings rates vary between a low of 2 per cent (in Maharashtra) and a high of 15 per cent (in Kerala and Rajasthan).

a) Per capita income

In order to understand the variation in the savings rates, we compared them with per capita incomes of agricultural households. When the ranks of the two variables are compared, we find that Maharashtra and Orissa with low per capita incomes have low savings rates, Karnataka with a relatively high per capita income has a high savings rate and Madhya Pradesh is in the middle of the spectrum with regard to both the variables.

b) Production acceleration

But clearly, per capita income does not explain the variation in the other nine states. The ranks of the two variables in

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* One could blow-up agricultural income by the rural/agricultural worker ratio. But this would give misleading results since the value added per worker is higher in non-agricultural activities. Moreover, the value added per worker probably varies significantly between states.

Table 8: Agricultural savings rate - state-wise 1971-72

States	Savings rate (%)	Per capita income (Rs.)
Andhra Pradesh	4 (2)	521 (7)
Gujarat	11 (8)	581 (11)
Haryana	10 (6)	867 (12)
Karnata	12 (9)	529 (8)
Kerala	15 (12)	531 (9)
Madhya Pradesh	10 (6)	405 (4)
Maharashtra	2 (1)	372 (1)
Orissa	5 (3)	377 (2)
Punjab	12 (9)	1061 (13)
Rajasthan	15 (12)	431 (5)
Tamil Nadu	5 (3)	470 (6)
Uttar Pradesh	12 (9)	380 (3)
West Bengal	8 (5)	535 (10)

Note: 1) Savings rate is aggregate savings as a percentage of income in agriculture and allied activities.

2) Rural population was multiplied by the proportion of workers engaged in agriculture to obtain the agricultural population.

3) Figures in brackets are ranks in the ascending order .

Sources: 1) Appendix Table 6; and Appendix Table IX

2) RBI Bulletin, April 1978.

3) India Bulletin of Food Statistics

these states differ by three or more. We, therefore, considered the role of acceleration in production. During an accelerating phase, the savings rate is likely to be high for two reasons: (1) consumption standards change at a much slower rate than income; and (2) if the production acceleration reflects attractive investment opportunities, then there is an obvious incentive to save. In a decelerating situation, these factors would work in reverse.

Six states show a lower savings rate than warranted by their per capita income (i.e. the rank of the savings rate is considerably lower than the rank of the per capita income). Of these, Andhra Pradesh, Tamil Nadu and Gujarat experienced a large deceleration in agricultural production in the second half of the 1960s (see Table 9). Thus in these states decelerating production from the mid 1960s did, apparently, result in a low savings rate in 1971-72.

Conversely, Kerala, Rajasthan and Uttar Pradesh, states with savings rates in 1971-72 higher than warranted by their per capita incomes, experienced a sharp rise in production growth in the second half of the 1960s (Table 9).

It, therefore, appears that production acceleration (or deceleration) has a significant influence on the savings rate.

c) Limits to saving rate?

There are three states for which the level of the saving rate is explained neither by the level of production nor by the change in the rate of production growth. These states are Punjab, Haryana and West Bengal. Agricultural households in these states had very high

Table 9: Annual growth rates of agricultural production (derived from triennial averages of terminal year index numbers)

States	1953-54/ 1963-64	1963-64/ 1977- 78	1960-61/ 1970-71	1970-71/ 1977-78
Andhra Pradesh	3.16	1.54	1.95	2.32
Assam	0.94	1.92	1.77	1.59
Bihar	2.59	1.66	1.38	2.11
Gujarat	5.02	2.83	4.29	2.37
Karnataka	3.94	2.77	3.53	2.14
Kerala	2.42	2.22	3.33	0.22
Madhya Pradesh	2.49	0.94	1.15	0.22
Maharashtra	2.68	2.23	-0.99	6.42
Orissa	3.45	1.37	3.26	1.53
Punjab & Haryana	3.97	6.21	5.75	5.01
Rajasthan	3.23	3.72	3.15	2.82
Tamil Nadu	4.04	2.29	2.31	1.93
Uttar Pradesh	1.45	3.53	2.70	2.85
West Bengal	1.49	2.58	3.12	1.89

Source: Jose 1982 Table 5, p.14.

per capita incomes (Punjab households had the highest; Haryana, the second highest; and West Bengal, the fourth highest). But the savings rates in these states were not appreciably higher than in the other states. It is possible, of course, that the savings rates here are understated. That, however, is unlikely to be the whole story.

It seems likely that there are limits to savings in forms considered here by us. The bulk of agricultural savings takes the form of physical investment in farm production. This investment is governed by the state of agricultural technology (as we elaborate in the next section). That there are limits to the extent of investment in farm activities is reflected partly in the fact that non-farm investment grew during the 1960s at a much faster rate than farm investment in almost all states (see Table 10).

Also, till the early 1970s investment in formal financial institutions was limited by their poor spread in rural areas and, of course, by the limited degree of agricultural commercialisation.

2) Financial flows

We consider first the financial flows in some detail for 1971-72 and then consider certain component flows for which information over time is available to get an idea of the trends.

a) Net financial flows, 1971-72.

Table 11 shows the net financial flows during 1971-72 in most

Table 10. Annual Growth Rates of Gross Capital expenditure undertaker by cultivators: 1961-62 to 1971-72[1]

(per cent)

States	Total	Farm Business	Non-Farm Business
Andhra Pradesh	- 2.4	- 3.4	20.5
Assam	6.0	0.1	23.0
Bihar	5.1	2.6	24.5
Gujarat	9.4	8.8	12.6
Jammu & Kashmir	5.8	6.0	14.9
Karnataka	6.0	4.9	25.0
Kerala	4.5	4.0	7.0
Madhya Pradesh	9.1	8.4	26.3
Maharashtra	6.0	6.6	6.0
Orissa	3.3	1.6	21.0
Punjab & Haryana	11.5	12.4	23.7
Rajasthan	5.6	3.8	3.2
Tamil Nadu	1.8	1.3	3.4
Uttar Pradesh	5.7	4.4	0.1
West Bengal	10.3	10.5	12.5

1 Compound growth rate implicit in the two end point observations.

Source: RBI All India Debt and Investment Survey.

major states in India.* The picture is one of considerable inter-regional variation. At one extreme, there was a net savings, and hence net outflow of resources from the rural sector, of Rs.60 crores in West Bengal. At the other extreme, there was a net resource inflow of Rs.75 crores in Maharashtra.

The variations, however, are not without a pattern. Some features of interest may be noted. Firstly, though the A sector in several states was a net recepient of resources, the NAR sector uniformly had positive net financial savings.

Secondly, the large net outflows from agriculture, both in absolute terms as well as in relation to physical investment, were from West Bengal, Bihar and Kerala. Of these, Kerala has had a long history of commercialisation and development of financial institutions. This very probably explains the very high level of per capita gross investment in financial assets in Kerala (see Table 12).

West Bengal, Bihar and possibly other North-Eastern states (though we do not have complete data for these states) fall in another category. West Bengal households did have a high per capita gross investment in financial assets commensurate with their per capita income. However in West Bengal and Bihar (and other North Eastern States), the net outflow of financial resources was due not so much to the high level of gross financial investment as to the poor inflow of credit from institutional agencies. Table 12 shows that the per capita credit to rural households was the least in

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* The computation details are in Appendix 2.

Table 11: Net Financial savir g - State-wise, 1971-72

States	Net financial savings (Rs. crores)			Net financial savings Gross physical investment		
	A	NAR	R	A	NAR	R
Andhra Pradesh	- 0.35	2.00	- 1.65	- 0.01	0.28	0.02
Bihar	32.63	4.92	37.55	0.26	0.85	0.29
Gujarat	-18.91	10.45	- 8.46	- 0.16	0.75	-0.06
Haryana	- 7.07	1.52	- 5.55	- 0.11	0.18	-0.08
Karnataka	-19.79	0.21	-19.58	- 0.14	0.03	-0.14
Kerala	35.25	2.98	38.23	0.65	1.24	0.68
Madhya Pradesh	-12.42	5.96	- 6.46	- 0.09	0.99	-0.05
Maharashtra	-92.94	18.37	-74.57	- 0.81	1.67	-0.59
Orissa	- 3.01	0.78	- 2.23	- 0.08	0.22	-0.06
Punjab	2.57	13.98	16.55	0.03	0.72	0.14
Rajasthan	1.85	3.87	5.72	0.02	1.02	0.05
Tamil Nadu	-24.26	6.41	-17.85	- 0.32	0.38	-0.19
Uttar Pradesh	- 4.81	19.58	14.77	- 0.02	0.72	0.04
West Bengal	33.44	26.40	59.84	0.42	1.68	0.62

Source: 1) RBI All India Debt and Investment Survey, 1971-72

2) Appendix 2.

Table 12: Per capita formal financial assets and liabilities in rural (R) and agricultural (A) households (Rs.)

States	gross assets		gross liabilities		net assets	
	R	A	R	A	R	A
Andhra Pradesh	7.56	8.16 (8) (7)	7.09	8.29 (8)	0.50	- 0.12
Bihar	10.74	10.89 (5) NA	3.33	3.66 (13)	7.40	7.22
Gujarat	23.26	19.29 (3) (3)	27 .67	31.02 (2)	- 4.41	- 11.72
HHaryana	8.19	7.24(11) (2)	14.88	18.07 (7)	- 6.69	- 10.82
Karnataka	11.59	10.85 (6) (6)	20.44	21.48 (4)	- 8.82	- 10.62
Kerala	35.49	53.65 (1) (1)	14.13	21.34 (5)	21.35	32.30
Madhya Pradesh	4.79	3.29(13) (10)	6.64	7.29 (10)	- 1.85	- 4.00
Maharashtra	12.24	7.75 (9) (13)	33.73	39.63 (1)	-21.49	- 31.88
Orissa	2.97	2.83(14) (12)	4.07	4.57 (12)	1.11	- 1.74
Punjab	39.71	31.03 (2) (1)	23.64	27.93 (3)	16.08	3.10
Rajasthan	8.35	7.11 (12) (9)	5.66	6.11 (11)	2.70	1.00
Tamil Nadu	10.22	9.38(7) (8)	16.44	19.96 (6)	6.22	- 10.68
Uttar Pradesh	9.35	7.51(10) (11)	7.40	8.24 (9)	1.94	- 0.72
West Bengal	20.90	15.38 (4) (4)	2.74	3.15 (14)	17.92	12.22

Note: Figures in first bracket are ranks of per capita assets or Liabilities and in the second adjacent bracket are ranks of per capita income, both series being in the decending order

Sources: 1) Appendix 2
2) India Bulletin of Food Statistics.

West Bengal and Bihar. (The per hectare credit was also relatively very low in these states). In the early 1970s, co-operatives were still by far the main conduit of credit into rural areas. The small inflow of credit into the North-Eastern states was due not to the limited physical spread of co-operatives in these states. In some measure, it was due probably to the high level of overdue to the co-operatives which set limits to the injections of fresh credit. At the end of June 1971, overdues as a proportion of outstandings were 60 per cent in Bihar, 70 per cent in West Bengal and 80 per cent or more in some of the other North Eastern states. The proportions were not only much higher than the all-India average of 40 per cent, but were indeed the highest among all states.* However, it could well be argued that the high level of overdues were themselves due to the low credit per capita and per hectare, which made the credit sub-optional and hence wasteful. In which case, the attitude of the government towards these states determined the extent of credit inflow, since the institutional credit agencies acted according to government policy.

Thirdly, the only state other than Kerala where there was a net outflow of financial resources despite an adequate inflow of credit was Punjab. This reflected the relatively high level of gross financial investment accompanying the high per capita income.

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* Orissa and Jammu and Kashmir were also at the 60 per cent level. In these states, too, the credit inflow in the early 1970s was poor.

Finally, the states where there was a large net inflow of financial resources into agriculture during 1971-72 were Maharashtra, Tamil Nadu, Karnataka and Gujarat. These states have had among the highest shares in institutional credit inflow (mainly the co-operatives in the early 1970s). Together, in the early 1970s, they accounted for about 60 per cent of credit inflow into all states, with just Maharashtra accounting for a quarter in some years. The institutional credit per hectare has been much above the all-India average in these states.

Though the overdues were relatively low in these states which received large institutional credit, they were by no means negligible. In Maharashtra, Tamil Nadu and Karnataka, the overdues were about 40 per cent of outstandings and only in Gujarat were they 20 per cent.

The high level of credit flows in Gujarat and Karnataka were probably required to finance the rapid growth in the 1960s. But this was not the case for Tamil Nadu and Maharashtra which experienced relatively slow growth in the 1960s.

Thus, the net financial flows have been determined partly by the internal dynamics of agriculture and partly by government policy. In Kerala (where the level of commercialisation has been high) and in Punjab (where per capita incomes had reached a high level), the net financial flow was out of agriculture. Some high growth states like Gujarat, Karnataka, and also Haryana, drew in financial resources on a net basis. The North eastern states received very little credit, partly because of the high level of overdues,

which have often been due to wilful default by cultivators (see RBI, 1974). However, certain important inter regional variations cannot be explained by the above lines of reasoning. For example, the large disparity in per capita and per hectare outstanding credit as between the North eastern states on the one hand and Maharashtra and Tamil Nadu on the other does not seem related to per capita income levels or growth or even the level of overdues. Government policy, influenced by other criteria, appears to have had a significant influence in directing credit through institutional agencies.

b) Rural "informal" savings

"Informal" financial savings or financial assets with counterpart financial liabilities within the rural sector have been estimated as in the all-India case (see also Appendix 2). Purchase of land has also been treated as "informal" savings and this again, for most part, is balanced by disinvestment within the sector. Total informal savings have been expressed as a proportion of gross "formal" financial savings. The relevant details are presented in Table 13.

There seems a fairly close relationship between per capita income and per capita gross formal financial savings (column (1) and (2), Table 13). In addition, states with a high per capita income have a low ratio of informal to formal financial savings. The ratio in the high income states is: Punjab: 0.61; Haryana: 0.80; Gujarat: 0.55; West Bengal: 0.28; Kerala: 0.15 and Karnataka: 0.77. The low income states, in contrast, have a high informal to formal

Table 13: Rural "Informal" Savings - State-wise, 1971-72

States	State Rank[1]		"informal" financial savings as a ratio of gross formal financial savings	Expenditure on purchase of land as a proportion of gross formal financial savings	Total "informal" savings as a proportion of gross formal financial savings[3]	Gini coefficient for asset holdings
	Per capita income[2]	per capita gross formal financial assets investment				
	1	2	3	4	5	6
Andhra Pradesh	(7)	(12)	0.95	0.48	1.43	0.703
Bihar	(NA)	(7)	0.06	0.10	0.16	0.672
Gujarat	(3)	(3)	0.38	0.17	0.55	0.632
Haryana	(2)	(11)	0.24	0.56	0.80	0.629
Karnataka	(6)	(6)	0.38	0.39	0.77	0.655
Kerala	(5)	(2)	0.03	0.12	0.15	0.661
Madhya Pradesh	(10)	(13)	0.50	1.72	2.12	0.589
Maharashtra	(13)	(5)	0.22	0.48	0.70	0.649
Orissa	(12)	(14)	0.67	0.45	1.12	0.598
Punjab	(1)	(1)	0.06	0.55	0.61	0.683
Rajasthan	(9)	(10)	0.74	0.20	0.94	0.559
Tamil Nadu	(8)	(8)	0.62	0.73	1.35	0.711
Uttar Pradesh	(11)	(9)	0.36	0.59	0.95	0.592
West Bengal	(4)	(4)	0.07	0.21	0.28	0.660

1. The ranks are in the descending order

2. Though the variables in this table all relate to the "rural" sector, per capita income relates to the "agricultural" sector, since per capita rural income could not be estimated.

3. sum of columns (3) and (4)

Sources: 1) RBI All India Debt and Investment Survey, 1971-72.
2) Appendix 2.
3) RBI Bulletin, April 1978.
4) RBI Staff occasional papers, June 1977

savings ratio: Rajasthan: 0.94; Madhya Pradesh: 2.12; Uttar Pradesh: 0.95 and Orissa: 1.12.

The exceptions to these generalisations may be noted. The per capita income for Bihar was not available, but was probably low. The low informal to formal savings ratio in Bihar was thus probably not commensurate with its per capita income. This was also so in Maharashtra. In the case of Maharashtra, we have at least a partial explanation. We noted above that Maharashtra received a very large volume of co-operative credit. To be eligible for such credit, cultivators have to subscribe to shares of agricultural credit societies and make some deposits also. Often credit is provided to help cultivators fulfil these obligations. Hence the high level of formal financial savings in Maharashtra probably exaggerates the genuine savings of cultivators.

Important exceptions also are Tamil Nadu and Andhra Pradesh. These states had relatively high per capita incomes but also had rather high informal to formal financial savings ratio. The explanation lies in the high degree of inequality in these states (see column (6), Table 13). It would appear that high inequality creates internal demand for credit which richer cultivators are able to satisfy. High inequality also probably is accompanied by more frequent land sales by poorer cultivators to richer cultivators. The experience of

Tamil Nadu and Andhra Pradesh suggests that a high degree of inequality can stem the movement towards formal financial assets.

It is of interest here to note that not only do farmers in Andhra Pradesh and Tamil Nadu engage to a greater extent in internal lending and land purchases, they are also more prone to stocking of food grains. The data on market arrivals shows that Punjab and Haryana farmers market most of their grain within three months of the harvest. Gujarat farmers market about half the grain within three months. But farmers in Tamil Nadu and Andhra market only about a quarter of the grain within three months of the harvest.*

c) Trends in statewise rural net financial flows

Complete information of the type examined above for 1971-72 is difficult to place together for other years. We therefore look at some component flows. Data are available on co-operatives and commercial bank net flow. Since these constitute important components of rural financial flows, their trends should be pointers to the aggregate trends.

The data presented below is all based on three year averages around the year indicated. The method of computation is discussed in Appendix 2. As above, the important features of the computation method are indicated where necessary for interpretation.

(i) Co-operatives

Table 14 shows the net flows to the co-operatives in the

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various states for three times points. A negative sign indicates net inflow of resources from co-operatives into agricultural households. Almost all signs in Table 14 are negative, indicating that co-operatives have been a net source of financial to resources to agricultural households practically throughout the period in all states.

Two states show a net contribution of resources to co-operatives in 1977-78. These are Punjab and Gujarat. It will be noted that in 1971-72 both these states were net recepients of resources from the co-operatives. As was discussed above, however, when all financial flows are considered, there was a net outflow of resources from Punjab in 1971-72 even though there was a net inflow through the co-operatives. The fact that even on the co-operative account the flow turned outward by the late 1970s suggests that the outflow through other instruments also must have increased.

In the case of Gujarat, the aggregate inflow into A households in 1971-72 was of the order of Rs.19 crores (see Table 11). Almost all of this inflow was accounted for by the co-operatives (Table 14). The large net outflow (Rs.25 crores) on co-operative

Table 14: Net Co-operative Bank Flows: agricultural households

(Rs. Crores)

States	1961-62	'71-72	77-78
Andhra Pradesh	- 6.69	- 8.36	-34.79
Bihar	- 0.18	- 8.70	-12.28
Gujarat	- 4.34	-14.23	+25.00
Haryana	-	- 6.07	-16.12
Karnataka	- 3.02	-13.30	-10.95
Kerala	- 0.68	+ 3.66	- 0.37
Madhya Pradesh	- 2.94	-11.80	-10.00
Maharashtra	- 6.26	-81.71	- 2.41
Orissa	- 0.56	- 4.36	-11.59
Punjab	- 0.63	- 4.02	+ 3.99
Rajasthan	- 0.28	- 3.51	-11.92
Tamil Nadu	- 7.31	-22.06	-26.62
Uttar Pradesh	- 4.75	-21.71	-19.67
West Bengal	- 0.85	+ 0.58	-21.80

Note: The figures are all three year averages around the year shown. The negative entries show a net inflow into agricultural households.

Source: Appendix 2

account in 1977-78 once again suggests that the net financial flows were out of Gujarat's agricultural's households in the late 1970s and that the outflows were fairly substantial.

That Punjab and Gujarat should show large and increasing financial outflows is significant. These are states that have had high per capita incomes for a long period of time. They have also experienced periods of high growth. However, it will be noted that Gujarat experienced growth rates well over 4 per cent in the 1950s and 1960s and that the growth rate fell to almost half ($2\frac{1}{3}$ per cent) in the 1970s (see Table 9). Gujarat agriculture thus drew resources as long as it was on a high growth path and with the slackening of production turned into a net supplier of resources. The Punjab story is similar. With the slackening of growth, the net resource outflow has, as suggested above, increased.

Another state where a similar process has probably occurred is Karnataka. This is also a state which has had a relatively high per capita income and which experienced high growth in the 1950s and 1960s followed by deceleration in the 1970s (see Table 9). The annual gross credit inflow from the co-operatives in 1977-78 remained at Rs.18 crores level of 1971-72. On the other hand deposits in co-operative societies increased, thereby reducing the net annual inflow.

Two states which showed the largest net inflow from the co-operatives in 1977-78 and which have also shown a secular increase in net inflow are Tamil Nadu and Andhra Pradesh. These increases

cannot be explained by changes in growth conditions. The growth rate in Andhra Pradesh has fluctuated and did increase marginally from 2 per cent in the 1960s to 2.3 per cent in the 1970s. This order of increase does not seem to warrant the large increase in net credit inflow. In Tamil Nadu, the large increases in credit inflow have been accompanied by a secular deceleration in growth. It will be recalled that these are the states with the highest levels of inequality and showed in 1971-72 a relatively high level of "informal" lending activity and expenditure on purchase of land. It seems possible that the agriculturists in these states have used institutional credit for "informal" activities (as defined by us) rather than for production purposes.

The annual credit flows into Maharashtra declined overtime as the overdues there mounted. The annual flow into the West Bengal and Bihar improved, though overdue levels declined only in West Bengal. However, differences in per hectare outstanding credit between Maharashtra and the north-eastern states persist as in the early 1970s.

(iii) Commercial banks

The broad observations made from the data on co-operatives are completely corraborated by the commercial bank figures. (See Table 15). The large outflow of financial resources have been from high income, growth decelerating areas, Gujarat and Punjab. Karnataka's transition from a net recepient of resources to a surplus state is also seen. Tamil Nadu and Andhra Pradesh are once again the major net resource recepients. The flow imbalances between the

Table 15: Net Commercial Bank Flows: rural households

(Rs. crores)

States	1974-75	1977-78
Andhra Pradesh	- 8.43	-28.84
Assam	2.27	- 3.56
Bihar	2.21	- 2.08
Gujarat	15.69	15.11
Haryana	- 0.34	- 8.71
Karnataka	-11.62	4.00
Kerala	- 2.57	8.78
Madhya Pradesh	- 2.73	- 2.71
Maharashtra	- 6.29	- 2.17
Orissa	0.43	- 7.38
Punjab	20.10	30.86
Rajasthan	- 1.76	- 8.70
Tamil Nadu	- 3.46	- 7.44
Uttar Pradesh	11.48	11.44
West Bengal	7.90	- 2.40

Note: The figures are all three year averages around the year shown. The negative entries show a net inflow into rural households.

Source: Appendix 2.

North-eastern states and Maharashtra also appear to be undergoing correction.

Section 4: Nature and determinants of farm investment

As indicated in Sections 1 and 3, rural physical investment grew only slowly in the 1960s. (The current price estimates for 1961-62 and 1971-72 imply an annual compound growth rate of about 6 per cent). The slow growth of rural physical investment reflected essentially the sluggishness of the dominant farm investment. On the other hand, cultivators' investment in financial instruments grew rapidly during the 1970s. We suggested, above, the financial investment growth reflected continued limits to farm investment in the 1970s. This must, of course, remain a hypothesis till firm estimates on farm investment are available. However, evidence on the nature and determinants of farm investment, presented below, seems to corroborate our interpretation.

1) Composition of cultivators' physical fixed investment

Table 16 shows the changes in the extent and composition of physical investment undertaken by cultivators. Several features shown up by the table are of importance.

(i) Farm investment

Between 1961-62 and 1971-72 the proportion of cultivation reporting capital expenditure in farm business fell from two-thirds

Table 16: Capital expenditure of cultivators

	Average per household (Rs.)		Proportion of households reporting expenditure (%)	
	1961-62	1971-72	1961-62	1971-72
1) Farm business	139.5 (69.0)	205.6 (63.6)	66.7	48.6
2) Non-Farm business	6.5 (3.2)	16.8 (5.2)	5.5	6.0
3) Residential plots and buildings	48.1 (23.8)	77.1 (23.8)	49.8	34.5
4) Durable household assets	8.1 (4.0)	23.8 (7.4)	11.6	18.7
Total	202.2	323.3		

Note : Figures in brackets give percentages to totals.

Source : RBI All India Debt and Investment Survey, 1971-72

to half.* At the same time the share of farm investment in total investment also fell. An examination showed that decline in the proportion of cultivators undertaking farm investment has occurred amongst all classes of cultivators. But the decline represents the operation of very different forces on small and large cultivators. The proportion of large cultivators reporting possession of assets (i.e. physical stock) does not show a decline. However, in the case of small cultivators, the proportion reporting both stocks and flows shows a fall.

The evidence, therefore, suggests that disinvestment has been taking

* The comparability of the 1961-62 and 1971-72 surveys is discussed in Appendix 1.

place among smaller cultivators. On the other hand, larger cultivators are buying higher valued equipment which requires less frequent replacement.

The quinquennial Livestock Censuses support the above interpretation based on RBI's Debt and Investment Surveys. The growth in the number of traditional implements and machinery (wooden plough, carts, sugar cane crushers worked by bullocks, etc.) and livestock, which smaller cultivators principally invest in, has been extremely low: in some cases the 1977 census shows an absolute fall over 1972. On the other hand, more modern implements (iron ploughs, tractors, pumpsets, sugarcane crushers worked by power, etc.) have been growing rapidly. These are purchased mainly by larger cultivators and these, moreover, require less frequent replacement than traditional implements.

The disinvestment and the greater intervals between replacement reduce the annual capital expenditure. The higher value of modern machinery and equipment tends to raise the annual capital expenditure. The evidence, as it exists, suggests that the former two effects have had a significant impact on reducing the growth in the flow of capital expenditure.

Of course, thus far we have explored only the proximate changes in the nature and location of capital expenditure. Ultimately, the growth in physical investment is determined by the dynamics of technological and institutional change in agriculture. We look into these factors later in the section. But before doing that it is useful to look at the other components of cultivators' capital expenditure.

(ii) Other investment

Table 16 shows that the proportion of cultivators reporting investment in non-farm business and durable household assets increased between 1961-62 and 1971-72. The share of these components of capital expenditure in total expenditure also rose. The rise was particularly sharp in the case of durable household goods.

The movement towards non-farm investment and investment in durable household goods represents a shift in the asset preference of larger cultivators, who undertake the bulk of these investments. It appears to signify limits to returns from farm investment. These limits apparently are encouraging investment in non-agricultural activities. That this shift is taking place particularly among large farmers may be seen from Table 17. In most states, it is the largest agricultural income size group that has significant fixed investment per household in non-agricultural business. The distribution of non-farm activity is more evenly spread only in Punjab and Haryana. This is significant, in as much as the shift to non-farm investment seems most pronounced in states that have been most dynamic agriculturally.

The decline in proportion of households reporting investment in residential buildings and plots once again signifies a dis-investment process among small cultivators, as in the case of farm

Table 17: Value of fixed assets per households in non-agricultural enterprises

	Size of agricultural income (Rs.)							
	No income	below 600	600-999	1000-1999	2000-3999	400 & above	income not recorded	All size
1	2	3	4	5	6	7	8	9
Andhra Pradesh	514.59	542.19	650.95	1030.65	1994.88	3424.40	610.00	679.37
Assam	923.65	819.81	870.41	1305.06	1323.86	2737.24	1154.00	1161.56
Gujarat	1869.62	932.37	916.27	1527.40	3812.69	15299.44	-	2414.25
Haryana	1306.04	1447.30	2196.46	2217.91	3078.94	2555.07	2700.00	1515.31
Karnataka	942.65	959.21	1317.78	1436.80	2302.56	5388.02	-	1292.66
Kerala	1044.24	456.20	750.34	1212.21	1490.81	7526.58	-	945.45
Madhya Pradesh	620.62	439.51	662.68	614.59	834.38	3113.91	700.00	736.97
Maharashtra	992.59	768.98	920.66	1529.22	2445.23	4469.64	1038.50	1313.01
Punjab	1372.55	2470.91	2267.02	3781.19	2986.45	6124.20	-	1864.24

Table 17 (Cont.)

1	2	3	4	5	6	7	8	9
Tamil Nadu	648.03	599.47	929.55	1677.45	1787.57	6062.97	189.50	852.90
Uttar Pradesh	1126.47	613.99	713.40	1236.82	2272.30	3581.62	427.21	1142.29
West Bengal	554.23	405.24	745.62	646.19	1461.76	2682.79	549.00	737.63
Bihar	411.69	446.45	518.27	718.83	1034.29	3501.00	547.38	714.43
Himachal Pradesh	1890.03	1567.87	2082.8	1616.33	2273.16	4552.24	-	2077.10
Jammu & Kashmir	1666.69	1395.12	1482.83	1447.00	1511.59	3069.55	363.16	1733.50
Orissa	337.37	369.78	376.10	499.14	643.18	1625.43	-	426.79
Rajasthan	1438.27	834.01	1[illegible]9.77	15[illegible].74	1883.91	4473.23	524.00	1414.39

Source: Sarvekshana, April and July 1978.

investment.*

2) The determinants of farm investment

Kuznets (1957, p xi) and Tostlebe (1957, p13, 14) have pointed out that American farm investment has in the past been determined primarily by technological changes and institutional conditions rather than merely by a favourable movement of relative price. Though such an examination has not been undertaken for India, the lack of response of aggregate production to a shift in terms of trade in favour of agriculture indicates even in the Indian case investment cannot be stepped up only by manipulating prices (see Thamrajakshi, 1977, pp 381-384).

In the context of Indian agriculture, production technology is determined principally by the availability and "quality" of water. The supply of increased quantities of water through irrigation makes possible a shift in cropping pattern, usually to higher valued crops. The "quality" of water, or the degree of control that can be exercised over water use, determines the efficient adoption of modern high yielding seed varieties as well as the efficient use of chemical fertilizers. As Raj has pointed out: "The percentage area of the land that can be provided with assured supplies of

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* Our analysis above shows that the study of changes in inequality should not be confined only to studying changes in gini coefficients of consumption expenditure and asset holdings. Investment and disinvestment may not make an impression on consumption and asset stocks in a short space of time, but represent underlying forces which will determine future income streams. For further limitations of conventional inequality measures, see Kurien.

water therefore imposes a limit to the rates of growth that can be realised by technological change" (Raj, 1970, p.122).

Almost by definition, investment is likely to increase most in areas of rapid technological change. In the Indian case, we have just argued that irrigation determines the technology. As the proportion of area irrigated increases, private investment is likely to increase for several reasons. Of course, irrigation itself would, if privately provided, demand investment expenditure from agricultural households. In addition, cropping pattern changes and technological changes in crop production are likely to demand investment in land preparation, agricultural implements and machinery.

Moreover, areas of rapid technological changes, i.e. areas with increasing irrigation, also experienc rapid growth in income (see Raj, 1970, p.121). Thus we may expect relatively rapid growth of investment in areas with expanding irrigation facilities, as both the demand and supply conditions are favourable to growth of investment.

We tested the above propositions with the Debt and Investment Survey data. The Surveys provide data on fixed capital formation (FF) by cultivators in farm business.* Fixed capital formation per

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* Fixed capital formation used here is to be distinguished from gross capital expenditure used above for estimating savings. Fixed capital formation does not include expenditure on repairs and maintainance and on livestock and land purchases.

gross cropped area (FF/A) was computed for 1961-62 and 1971-72. An effort was then made to explain the growth in FF/A. (FF/A growth was measured as the ratio of the value of the variable in 1971-72 to its value in 1961-62 and denoted by (FF/A)!).

In the regression analysis, three independent variables were tried. One, as discussed above, was the change in the proportion of area irrigated (Δ IRP): this represented a proxy for the technological change taking place. Second, to capture the effects of type of irrigation being introduced, the change in the proportion of area irrigated by wells (ΔW) was considered: well irrigation involves, in general, greater private investment than canal and tank irrigation and is associated, moreover, with a more intensive use of inputs. Third, an attempt was made to capture the effect of institutional factors on private investment. The variable used was a measure of inequality in asset distribution. The expectation here was that ceteris paribus higher inequality should promote greater investment. The regression results, however, showed the opposite, though the variable was not statistically significant. The result reflected the fact that states with relatively low inequality, such as Punjab, Haryana and Gujarat increased investment relatively rapidly, whereas in high inequality states, such as Tamil Nadu and Andhra Pradesh, investment growth was sluggish.

In the result finally presented, we have considered only Δ IRP and ΔW. The results are given in Table 18. Our hypothesis is borne

out quite strikingly. The $\bar{R}^2$ is very high, which implies that the independent variables explain the bulk of the variations in the independent variable, i.e. (FF/A)'. The co-efficients of the individual variables are also highly significant.

About a quarter of the fixed capital formation expenditure goes directly into providing irrigation. It is unlikely therefore that this expenditure would dominate total expenditure to a degree that would make the above regressions tend towards tautology. Even so, to take care of the possibility, expenditure on irrigation was removed from total expenditure, and the resultant variable (FN/A)' was regressed once more on Δ IRP and Δ W.* This regression (shown in Table 18) also gave very good results.

Change in technology, as represented by the extent and composition of irrigation, do, therefore, have an important impact on the growth of both aggregate and non-irrigation investment.

It may be noted here that irrigation appears to be a specially good proxy for technology in Punjab and Haryana. When these states are dropped from the analysis, the explanatory power of the model falls

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* The expenditure deleted was direct expenditure on "wells" and "other irrigation works". This probably does not include expenditure on pumpsets, which perhaps gets covered under "agricultural implements and machinery". No breakdown for the latter was, however, readily available.

TABLE 18: DETERMINANTS OF FARM INVESTMENT

1) All States

a) $(FF/A)'$ = 1.01 + 0.067 Δ IRP + 0.212 Δ W

Standard error (0.118) (0.041)

T- Value (0.569) (5.184)*

R^2 = 0.865 R^{-2} = 0.854

b) $(FF/A)'$ = 0.86 + 0.535 Δ IRP

Standard error (0.131)

T- Value (4.090)*

R^2 = 0.562

2) Without Punjab and Haryana

a) $(FF/A)'$ = 1.65 + 0.1846 Δ IRP - 0.959 Δ W

Standard error (0.058)* (0.051)

T- Value (3.169) (1.893)

R^2 = 0.478 R^{-2} = 0.434

b) $(FF/A)'$ = 1.49 + 0.123 Δ IRP

Standard error (0.053)

T- Value (2.309)*

R^2 = 0.308

3) All States

a) $(FN/A)'$ = 1.32 + 0.148 Δ IRP + 0.028 Δ W

Standard error (0.072) (0.025)

T- Value (2.053) (1.137)

R^2 = 0.647 R^{-2} = 0.620

b) (FN/A) = 1.31 + 0.210 Δ IRP

Standard error (0.047)

T- Value (4.503)*

R^2 = 0.609

4) Without Punjab and Haryana

a) $(FN/A)'$ = 1.54 + 0.187 Δ IRP - 0.075 Δ W

Standard error (0.069)* (0.060)

T- Value (2.717) (1.247)

R^2 = 0.405 R^{-2} = 0.356

b) (FN/A) = 1.41 + 0.139 Δ IRP

Standard error (0.058)

T- Value (2.383)*

R^2 = 0.321

Note: FF : fixed capital formation
FN : FF - expenditure on irrigation
A : total cropped area
Δ IRP : change in proportion of area irrigated
Δ W : change in proportion of area irrigated by wells.
$(FF/A)'$ = (FF/A)1971-72 ÷ (FF/A) 1961-62

* Significant at 1 or 5 per cent level.

(see Table 10). However, the estimated equations indicate that irrigation growth has had a strong influence on physical investment growth even in other states.

If irrigation determines the technology of agricultural production, the further question that arises is: what determines irrigation? Irrigation development may be undertaken by the government or it may be undertaken privately. In either case growth in irrigated area will be constrained by environmental factors, i.e. climatic and geo-structural factors. Private investment will be further constrained by the level of infrastructure, rural electrification for example. In addition, private investment in irrigation will be influenced by the state of knowledge in crop production, which, in turn, determines the expected returns from investment. Thus the availability of high yielding varieties, not associated with unduly high risks, may induce investment in irrigation.

To the farmer, therefore, technology is exogenously given by the environment, the infrastructure and the state of knowledge. These are the basic factors determining investment and production [illegible] agriculture. The environmental factors are, in particular, a major constraining factor. "In a country like India that has had a long tradition of irrigation, and where past investments have already exploited a large part of the more easily available water resources, not only is the scope for further extension more limited than in some other countries, but is likely to be much more costly" (Raj, 1970,

Before closing this section, one possible link (suggested above) between physical and financial investment may be noted. The slowing down of irrigation growth during the 1970s in Punjab, Gujarat and Karnataka has been accompanied by increased investment in financial assets by the agricultural households of these states (see Table 19). On the other hand, continued irrigation development in Haryana and Uttar Pradesh has been accompanied by a net drawing in of financial resources into these states (see Table 19).

Summary and implications

In this paper we tried to explore some dimensions of rural savings and investment behaviour. Here we first summarise our findings. In doing so, we try particularly to link the findings at the different stages of the analysis. On the basis of the understanding thus acquired, we examine the consistency of the relevant Sixth Plan targets.

The major points emerging from the paper are:

1) Aggregate savings

The rural savings rate has shown no perceptible secular tendency to rise during the last two decades. The rate has remained in the region of about 8-9 per cent. Within the rural households, agricultural households have had a slightly higher savings rate than non-agricultural households. Neither category of households shows a

Table 19: Irrigation growth and net financial flows

States	Net irrigated area (000 ha.)				Net inflow to Co-operatives from farm households (Rs. crores)			Gross Co-operative Credit flow to farm households (Rs. crores)		
	1961-62	1965-66	1971-72	1976-77	1961-62	1971-72	1977-78	1961-62	1971-72	1977-78
Punjab		2263	2954	3194		-4.08	+ 3.99		13.18	7.00
Gujarat	741	1041	1407	1333	-4.34	-14.23	+25.00	7.63	31.53	Negligible
Karnataka	909	975	1598	1215	-3.02	-13.30	-10.95	4.42	17.91	18.32
Haryana		1167	1565	1798		- 6.07	-16.12		8.02	22.81
Uttar Pradesh	4803	5874	6989	8260	-4.75	-21.71	-19.67	6.41	32.54	48.70

Note: Co-operative flows are 3 year averages around the year shown.

Sources: 1) India, Statistical Abstrats of India

2) Appendix 2.

rising savings rate (see section 1).* The capacity of rural households to save has clearly been limited. The economy wide savings rate has been significantly higher than the rural rate and has also been growing.

There are probably good reasons for a non-growing rural savings. But the significant feature emerging from our analysis, on which greater reliance can be placed, is the changing composition of rural savings. However, before examining the composition, it is useful to look at the factors influencing aggregate savings.

The relatively steady rural savings rate is consistent with an almost stationary rural per capita real income (Section 1). Our cross-section analysis showed that acceleration in production is accompanied by rising savings rates (Section 3). At the all-India level, there has been no acceleration in production during the last two decades. Indeed, there probably has been some deceleration in the 1970s. The relatively stable savings rate is once again consistent with the lack of acceleration in agricultural production.

It may, of course, be argued that though per capita income has not risen, distribution, as between farmers has very probably

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* The savings rates discussed here are "gross" rates, i.e. no attempt has been made to account for depreciation. As such, they are probably not very different from the "net" rates obtained by Krishna and Rayachaudhuri (1982). However, the methods used for estimating savings here are quite different. For limitations of the Krishna and Rayachaudhuri exercise see Mody et al 1982.

worsened (on account of selective access of large farmers to modern production technology and associated supportive services), and that should give a boost to the savings rate. There probably is some basis to this argument. It is possible that our estimates do not adequately capture the new forms of investment being undertaken by rural households. There are, however, two points to be observed here. One is that the worsening distribution has also meant disinvestment by small farmers (Section 4).

Second, as suggested by our cross-section analysis (Section 3) there appear to have been limits to investment in formal financial assets (i.e. assets of regulated financial institutions) and also to investment in physical assets on the farm. Of course, the difference between limits to savings capacity and limits to investment opportunity is probably a close one. In the second half of the 1960s, after the calamitous mid-1960's, investment accompanying irrigation growth could not be financed by the internal resources of agricultural households. In the 1970s, constraints on investment in financial assets have reduced, but constraints on physical investment (particularly in some regions that were specially dynamic in the 1960s) have increased. To understand the constraints on growth of physical farm investment, and the interplay between physical investment and financial flows, we looked into the matter a little more closely.

2) Physical farm investment

Physical investment is closely related to changes in technology.

In the Indian situation, we argued, irrigation growth is a good proxy for technical change. Statistical, cross-section, analysis did indeed show that fixed investment growth was related to growth in irrigation and to the changes in the nature of irrigation (increases in proportion of area irrigated by wells) (Section 4). After significant increase in irrigated, particularly well irrigated area, during the 1960s, there has been a slowdown in the 1970s.* Even in the 1960s, the investment growth (according to our data) was sluggish. The slowdown in irrigation growth in the 1970s has contributed to continued sluggishness in farm investment growth. The slowdown has been particularly sharp in Punjab, Gujarat, and Karnataka, [illegible] states that had experienced rapid irrigation expansion in 1960s (Section 4). (As, however, has been noted in section 4, the slowly growing capital formation has embodied significant technological change particularly modern machinery and equipment).

With constraints operating on fixed farm investment, there has been an increasing tendency to shift to investment in farm working capital, non-farm business, durable household assets and formal financial assets (Section 2 and 4).

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* The rate of growth in net irrigated area in the 1960s was about 2½ per cent per annum. This rate has fallen to about 2 per cent. The fall in the rate of growth in "well" irrigation has been from 6 per cent to 4 per cent.

3) Formal (external) financial flows

The rural sector was a net recepient of financial resources from other sectors in the 1960s particularly in the second half of that decade. The resource inflow was mainly into agricultural households, as non-agricultural rural households were, and have continued to be, net lenders of financial resources. In the 1970s, there has been a sharp change in the case of agricultural households. From net recepients, these households have turned into net lenders, and the extent of net lending has grown over the 1970s. Net financial savings (i.e. net lending) of agricultural households have increased as a proportion of physical assets formation by agricultural households and as a proportion of net financial savings of the "household" section as a whole (Section 2).

The large inflow of resources during the second half of the 1960s was mainly through the co-operatives. Co-operative credit increase during that period took principally the form of medium and long term loans rather than short term loans, and clearly supported the renewal of agricultural growth, based on expansion of irrigation, particularly in Punjab, Haryana, Uttar Pradesh and Karnataka.

An inter state analysis also shows that the net drawing in of financial resources from outside the sector increases during phases of irrigation investment based growth and, conversely, net financial savings increase as irrigation expansion and growth slow down (Section 4).

In the 1970s, the co-operatives continued to be net contributors of financial resources to the agricultural sector. But the extent of annual net inflow did not increase and probably even was on a declining trend (Section 2). Our analysis would suggest that this was related to the slow down in irrigation investment in the 1970s. (The slowdown of net inflow into Maharashtra, a major drawer of resources, was probably related to mounting overdues in that state). Of course, gross credit from commercial banks increased rapidly during the 1970s. But deposits in commercial banks increased equally rapidly such that commercial banks continued to be, as in the 1960s, net recepients of resources from agricultural households.* At the same time, financial savings in currency, life insurance premia and provident fund continued to increase, contributing to the increasing net outflow from agriculture (Section 2).

The difference between the 1960s and 1970s outlined above may, therefore, be summarised as follows: Private physical investment has grown slowly right through; however, given the limited savings capacity in the late 1960s, even the limited growth required external resources; in the 1970s, with the growth of incomes of large cultivators, and the probable deceleration in physical investment, net

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* The more recently constituted Regional Rural Banks have been net lenders to agricultural households in the late 1970s. However the amounts involved are yet relatively small.

financial resources have been flowing out of agriculture.

This is one part of the story. The other major influence on formal financial savings has been the physical spread of formal financial institutions. This may now be considered.

4) "Formal" and "informal" savings

We have defined "informal" savings as those relating to transactions within the rural sector and which, therefore, do not show up as net savings of the sector. We considered internal lending and borrowing and internal sale and purchase of land. Gross informal savings as a proportion of gross formal financial savings have declined over time (Section 2).

The cross section analysis (Section 3) suggested that rising per capita income is generally accompanied by a relative decline in informal savings. At the all-India level we find, however, a decline in informal savings despite no perceptible increase in real per capita income. It appears, therefore, that the increasing presence of formal financial institutions in rural areas has resulted in the drawing away of savings from informal channels to the formal institutions. (One wonders whether this has meant disinvestment in physical assets by small farmers.)

A strategy for resource mobilisation from agriculture, would, however, have to be cautions in extrapolating from past trends in this regard. The further shift away from informal savings channels would depend not just on continued increases in the physical presence of

formal financial institutions in rural areas, but also on the nature of growth. Our cross section analysis shows that high levels of inequality, as in Tamil Nadu and Andhra Pradesh, are associated with continued high levels of informal savings (Section 3).

5) Sixth Plan and the future

The Sixth Plan targets of relevance to us are those related to irrigation, household financial savings and agricultural credit. Our analysis above suggests some important links between these variables. The Plan document itself does not discuss these links and, in fact, does not even go into the question of rural households' financial savings. In our discussion below on the consistency of the Plan targets, we do not therefore attempt any precise quantitative assessment and confine ourselves to qualitative judgements.

The savings capacity of agricultural households is yet limited. Our analysis suggests that any effort at a significant technological upgradation of Indian agriculture through large increases in irrigated area (and through investment in drainage and flood control) is likely to require significant financial resource inflow into agriculture. Irrigation development in the 1960s had required a net resource inflow into agriculture, and it is only with the slowdown in irrigation growth, particularly in some important states, that the net financial savings of agricultural households have become positive and significant. The only state

that has been able to maintain high investment and growth without a net draft of external resources has been Punjab. Though even in Punjab, net financial outflow has increased as irrigation growth has slowed down.

The large planned increase of net "household" financial savings during 1980-85 will probably not be achieved if a serious attempt at achieving irrigation targets is made. According to the Plan, 2½ million hectares of net irrigation potential and utilization are to be created each year. This is a target more than 4 times the realised annual increases during the last two decades. If irrigation of this order is created, the resources required for private investment in agriculture will almost certainly be extremely large. Considerable credit will have to be pumped into agriculture and the agricultural sector willm in all probability, turn from a net lender of resources to the rest of the economy to a net borrower. Thus there clearly is an incompatibility between the irrigation targets and the "household" net financial savings targets.

Of course, this incompatibility will be reduced to the extent that the increased irrigation generates larger incomes. This will depend very much on the relationship between investment, income and population.

The incompatibility will also be reduced if the credit structure is rationalised. The high level of overdues have been attributed to wasteful use and wilful default. Our own analysis suggests that the regional distribution of credit has, in some

in some instances, not been related to credit requirements (Section 3). Our analysis also indicates that credit taken by large farmers in high inequality areas probably finances dissaving of poorer households rather than production increases.* Some analysts have, in addition, argued that credit only displaces private savings (Adams 1978, Bhalla 1979).

To what extent the above parameters can be changed, it is difficult to judge. As of now, we can only assess the prospects on the basis of past performance, which does show a link between investment and growth on the one hand, and credit on the other. Credit, of course, mainly facilitates. The ultimate constraints lie in environmental, infrastructural and technological factors. The targets that will probably not be met are the irrigation targets. To that extent, a continued outflow of financial resources from agriculture may be expected.

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* Though whether one views this as socially illegeimate use of credit is debatable.

Appendix 1 : Rural physical investment

The Central Statistical Organisation (CSO) prepares estimates of private capital formation in agriculture. Essentially these estimates are based on RBI's Debt and Investment Survey of 1961-62. The estimates prepared for 1961-62 on the basis of the Survey results are "carried forward" using a combination of indicators (population, gross sown area etc.).

Since 1961-62, the survey results of 1971-72 have also become available. The CSO does not appear to have incorporated the 1971-72 findings in its estimates of private capital formation in agriculture.

Two choices, therefore, exist. The CSO series could be used. On the other hand, the RBI has stressed that the 1961-62 and 1971-72 estimates are completely comparable (on this we have more to say below). As such, an implicit growth rate between 1961-62 and 1971-72 could be worked out and this rate could be used to derive estimates for the other years.

A series based on a single point estimate and moved forward by indicators (as the CSO series) has limited analytical use. The relationships of interest are already built into the series (see Rudra, 1963, pp.1273-4).

The procedure we have therefore adopted is the second one outlined above. The only justification for this procedure is that it uses more of the direct available evidence on rural and agricultural capital formation.

Ofcourse, this is not to deny the risk in estimating a trend from just two time points of available information. Thus, to ensure some degree of firmness, the comparability of the two estimates must be

established. According to the RBI, "since both the surveys were planned with an eye on comparability," the concepts and definitions of capital expenditure in the two surveys are the same (see RBI, 1978, p.122). The only possible source vitiating comparability could be the sample designs of the two surveys.

In essence, the 1961-62 survey covered a smaller number of villages than the 1971-72 survey. But within each village the 1961-62 survey canvassed a larger number of households. In the 1961-62 survey the households were not stratified before sampling, but in the 1971-72 survey, since the sample households were fewer in number, the households were stratified to reduce estimation bias, particularly the under estimation through under representation of the richer households.

The coverage of a larger number of villages in 1971-72 was mainly to provide estimates for agro-climatic regions within a state and not because the number of villages covered in the 1961-62 survey were considered inadequate for arriving at state estimates.

The implications of the household sampling need to be examined particularly with a view to understanding whether the 1971-72 design could lead to an underestimation of capital expenditure. This is because the 1971-72 estimate implies a low growth rate of capital formation during the 1960s, leading infact to a declining investment rate. As outlined above, the 1971-72 sample size was smaller but this deficiency was sought to be made up by stratifying the households. It appears unlikely that the 1971-72 estimate could

be an under estimate, since stratification ensured adequate representation of the richer households that undertake the bulk of the investment.

A further objection to comparing just two years could be that the conditions prevailing in the two years were very different. The best measure for the prevailing conditions seems to be the magnitude of agricultural production. As indicated in the accompanying table, 1961-62 and 1971-72 were very similarly in this regard. Both were years of high production after a significant rise in the earlier years. Both were followed by significant declines in production.

Index numbers of agricultural production

Crop year ending 1950 = 100		Triennium ending 1961-62 = 100	
1959-60	130	1969-70	123
1960-61	142	1970-71	131
1961-62	145	1971-72	130
1962-63	138	1972-73	119

Source: India, Economic Survey, various issues

Finally, the coverage of our estimate of gross physical investment should be noted. The Debt and Investment Surveys report an estimate of gross capital expenditure. From this estimate, the expenditure on purchase of land and land rights was deducted on the assumption that the bulk of the land transactions were between rural households. (Expenditure on purchase of land

does not represent investment for the sector as a whole as long as the transaction is between rural households). The estimate thus derived was used as the measure of gross physical investment.

It should be noted that our estimate includes expenditure on purchase of livestock. Clearly, this would lead to an over estimation of physical investment since some part of the purchase of livestock represents only a transfer of assets. However, at least a part of this overestimation would tend to balance the under estimation due to non-inclusion of investment in inventories and the omission of purchase of land from the urban sector.

The gross expenditure includes expenditure on repairs and maintainance. It has not clear how much of this represented replacement of depreciated capital stock and how much was basically current expenditure for upkeep and maintainance, if such a distinction can at all be made.

Appendix 2 : Rural financial savings

The financial flows have been estimated instrument-wise. The gross investment in financial assets and total credit taken were first derived. The difference gives the net financial savings of the households and represents the net outflow of resources on private capital account.

The lists of financial instruments in which rural households invest and the agencies from which they take credit are principally based on RBI's All India Debt and Investment Survey 1971-72. An attempt has also been made to estimate rural savings in the form of currency, an instrument not covered by the AIDIS. The estimation details of the various financial instruments are given in this appendix.

The financial flows have been estimated separately for the rural and agricultural sectors. This has been done at the all-India level and also state-wise. The sequence of estimation was all-India, rural; all-India, agricultural; and statewise rural and agricultural. The organisation of this appendix follows this sequence.

A. All-India, rural (Appendix Table I).

A.1 Financial assets

1) Currency

Household surveys have been unable to estimate

savings in the form of currency on account of an extreme reluctance to disclose currency holdings. However, according to one NCAER report, rural savings in the form of currency form one-third of such savings for the entire household sector (See NCAER, 1965, p.84). We have used this ratio for the entire period. Currency savings for the entire household sector have been taken from RBI's Reports on Currency and Finance.

2) Life insurance premium

The annual reports of the Life Insurance Corporation give a break-up of the rural and urban new business. The new business refers to the sum of new assurances. The share of rural business in the total was around 30% in the 1960s and 25% in the 1970s. These proportions have been applied to aggregate household savings in life insurance premia, as reported in the RBI's Reports on Currency and Finance.

3) Provident Fund contributions, Units etc.

Savings in the form of provident fund contributions, units, annuity deposits and deposits in non banking companies were estimated as follows: the ratio of financial assets in these forms to financial assets in the form of life insurance was obtained from the AIDIS, 1971-72. The ratio worked out to 1.90. The ratio was applied to life insurance premia, derived as indicated above, to obtain a series for provident fund etc. It may be noted that the series of procident fund, units etc. comprises almost entirely

of provident fund contribution, savings in the other forms being extremely small.

4) Small savings and "others"

RBI's Currency and Finance reports give the outstanding postal deposits (savings, recurring and time). The rural postal deposits for 1962 and 1971 were obtained from the AIDIS. The ratio of rural postal deposits to aggregate worked out to little less than 10 per cent for both years. A ratio of 10 per cent was applied to the series of total postal deposits to obtain the rural postal deposits.

To this derived series a further component was added. The ratio of the sum of all other small savings besides postal deposits and "other" financial savings to postal deposits was obtained from the AIDIS. The ratio worked out to about 2.5 in 1962 and 0.75 in 1971. The ratios for between 1962 and 1971 were obtained by interpolating and 0.75 was used for the period thereafter.

These manipulations gave the stock estimates. The flows for each year were derived by subtracting the stock of year t - 1 from the stock of year t.

5) Commercial bank deposits

Rural bank deposits outstanding in June 1973 and after were obtained from RBI's Basic Statistical Returns (BSR). For the earlier years, the average growth rate of outstanding deposits

between 1973 and 1980 (20 per cent per annum) was assumed and a series of outstanding rural deposits between 1961 and 1973 was generated. From these outstandings, the flows were derived as indicated above.

It should be noted that the BSRs define rural areas as centres with population of 10,000 or less. The conventional census classification, and one followed by the Debt and Investment Surveys also, is based on multiple criteria of size, density and occupational distribution, as discussed in the main text. This classification difference causes problems of comparability to which there is no ready solution.

6) Co-operative shares and deposits

The investment of rural households in the shares and deposits of co-operative credit societies and primary marketing societies was estimated. The credit societies included were: Primary Agricultural Societies (PACS), Central Co-operative Banks (CCBS), Primary and Central Land Development Banks. The outstanding paid-up capital and deposits held by individuals or "growers" were obtained from RBI's Statistical Tables Relating to the Co-operative movement in India. These were taken to be financial assets held by rural households. The flows were derived from the outstandings.

7) Informal (or internal) financial activity

The financial assets considered above relate to formal financial institutions. All other financial assets/liabilities creation is here described as informal financial activity. It is

assumed that such financial activity represents lending within the rural sector, i.e. whereas acquisition of the formal instruments described above leads to a resource outflow from the rural sector, informal lending leads to no net flow.

Acquisition of informal financial assets is normally grossly under reported in sample surveys. However, the debt to informal credit agencies is probably reported more accurately. Corresponding to this debt there must be financial assets. The procedure we have therefore followed is to take the debt reported by rural households to informal credit agencies (in the RBI's Debt and Investment Surveys) as a measure of informal sector financial assets. The credit agencies considered were: landlords, agricultural and professional moneylenders, traders, relatives and friends and "others". The debt of rural households outstanding to these agencies in 1961 and 1971 was obtained from the Debt and Investment Surveys. Assuming a constant compound growth rate, a series of loans outstandings was generated. From this series, the flows were obtained.

The asset flows described above are given in columns (2) to (11) of Appendix Table I.

A.2 Financial Liabilities

1) Commercial bank credit

RBI's BSRs give details on rural credit outstanding from 1973. Rural credit is here defined as credit issued by rural branches and

not as credit to rural households. This distinction is however important. In 1979 and 1980 almost 60 per cent of agricultural direct finance to cultivators was from non-rural branches. Since such finance accrues ultimately to rural households, a measure of financial flows in the rural sector must take cognizance of it. Hence, to the outstandings of rural credit as reported by the BSR, we added 55% of direct agricultural finance (also reported by the BSRS) to obtain estimates of total rural outstanding credit for the years 1973 to 1980.*

The estimates of outstandings so obtained were projected backwards using the growth rate between 1973 and 1980 (33 per cent per annum). The flows were derived from the outstandings so estimated.

2) Co-operative Credit

As in the case of shares and deposits of individuals in co-operative institutions, the credit to individuals from co-operative credit societies and primary marketing societies was considered. The list of societies included and the source were the same as those for shares and deposits (see above A.1.6). The outstandings were obtained and the flows derived.

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* For the same reasons, rural deposits are also underestimates. No adjustment has been made for this and hence it has to be borne in mind when interpreting the estimates.

3) Government Credit

Government credit flows to agriculture were obtained from RBI's Currency and Finance Reports and the report of the All-India Rural Credit Review Committee, RBI, 1969. For some years, the data was not available and the figures were filled in by the linear interpolation.

The credit flows into the rural sector and the net financial saving of the rural sector are show in Appendix Table I, columns(12) to (15).

B. All-India agricultural (Appendix Table II).

Agricultural households are a subset of rural households and can be either cultivators or agricultural labourers. Cultivators are defined by the RBI Debt and Investment Surveys as those operating more than 0.005 hectare. Only cultivators are considered in the following estimation since the financial assets and liabilities of agricultural labourers are negligible. The procedure used essentiallywas to apportion financial assets to agricultural households on the basis of Debt and Investment Surveys indicators. The liabilities were independently derived.

B.1 Financial assets

1) Currency and Commercial bank deposits

The RBI Debt and Investment Surveys show that ... cultivator households held 56% of the commercial bank deposits held by all rural households in 1961. The corresponding percentage in 1971 was

77. These percentages have been applied to savings in the form of currency and commercial bank deposits of rural households during 1961-62 and 1971-72, estimated as discussed in section A above (see Appendix Table 1, columns (2) and (8)). For the years between 1961-61 and 1971-72 linear interpolation was used to generate multiplying factors and after 1971-72 a constant 77 per cent was used.

2) Provident fund contributions and life insurance premia.

The Debt and Investment Surveys included these assets in the schedules only in 1971-72. The share of agricultural households in life insurance and provident funds held by all rural households was 61.2 and 48.2 per cent respectively. These proportions were applied to the provident fund and life insurance premia series estimated for all rural households (see section A above and Appendix Table 1, columns (3) and (4)).

3) Small savings and "others"

Since the bulk of small savings and "others" comprises of post-office deposits, the ratio of post-office deposits held by cultivators to those held by all rural households was used. The ratio worked out to about 73.7 per cent in both 1961 and 1971 and so was applied uniformally.

The financial savings of agriculturists described above are given in Appendix Table II, columns (1) to (7).*

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* No attempt was made to separately estimate informal financial assets of agricultural households.

B.2 Financial liabilities

Commercial bank outstandings of direct finance to cultivators is available from the BSRs for the period after 1973. The growth rate of these outstandings between 1973 and 1980 (37 per cent per annum) was used to project backwards these outstandings, from which the flows were derived.

Co-operative credit to the agricultural sector was taken to be the same as to the rural sector for which the estimation procedure was described above in section A.2.2. The co-operative credit estimated as in section A.2.2 goes almost entirely to agriculturists. A small fraction of primary agricultural socieites' loans does go for non-agricultural purposes, but even this probably goes to cultivators.

Government finance to agriculture is from RBI's Currency and Finance Reports and is the same series as used above for the rural sector.

The credit flows to agriculture are shown in Appendix Table II, Columns (8) to (11).

C. State-wise-rural (Appendix Table IV)

The statewise financial assets and liabilities flows in 1971-72 were estimated essentially by apportioning the relevant all-India flow to the states according to their share in the financial asset or liability on June 30, 1971 as given by the Debt and Investment Survey. For currency, the state wise distribution of commercial bank deposits was used and for small savings and "others",

the state wise distribution of post-office deposits was used. The state wise distributions for the different instruments are given in Appendix Table III.

Only the co-operative assets and liabilities were estimated independently. The outstandings relating to the same instruments and agencies as for the all-India estimates were obtained from the Statistical Tables Relating to the Co-operative Movement in India. Differences between outstandings at three year intervals were estimated and these were then divided by three to give an average annual flow during that period. This was done for three pairs of years, 1960 and 1963, 1970 and 1973, and 1976 and 1979. This gave state wise average flows around 1961-62, 1971-72 and 1977-78.

The above flows are presented in Appendix Table IV.

D. State-wise-agricultural (Appendix Table VI)

All agricultural flows, except for co-operative flows and government credit, were obtained by applying the ratio of the asset (or liability) held by cultivator households to that held by all rural households. These ratios are given in Appendix Table V. The commercial banks deposits ratio was used for currency and the post office deposits data for small savings and others.

Co-operative flows and government credit used were the same as for the rural sector, as in the all-India estimation.

The above flows are presented in Appendix Table VI.

Appendix Tables VII to IX provide data used in the preparation of Appendix Tables 1 to VI and also tables in the main text.

Appendix 3 : Working capital in agriculture

The CSO in the disaggregated statements of National Accounts Statistics gives the value of material inputs for different industrial sectors including agriculture. No such annual estimates of wage payments are available. A partial measure of increase in working capital may, therefore, be obtained by considering the material inputs. From the CSO, the increases in the annual flow of inputs may be estimated. Clearly, all of this increase does not represent increase in working capital, which is a function of the time over which the inputs are tied up. In Indian agriculture, the actual production process may be assumed to take 3 months. However, the output is not immediately marketed. In states like Tamil Nadu and Andhra, only about 25 per cent of the marketed output is released in the first 3 months after the harvest. On the other hand, a large part of the output is not marketed, and this portion of the output cannot be considered as constituting working capital.

Hence, we may assume that working capital is tied up for between 4 and 6 months. The accompanying Appendix Table X shows the increases in working capital on account of increased use of material inputs.

Appendix Table I : RURAL FINANCIAL ASSETS AND LIABILITIES FLOWS

(Rs. Crores)

	ASSETS									LIABILITIES				
Years	Currency	Life insurance	Provident fund etc.	Small savings and others	(Of which postal savings)	Co-op. shares and Deposits	Commercial Bank Deposits	Gross formal (External) financial savings	Informal (internal) financial savings	Total financial savings	Commercial bank	Co-operative credit	Government credit	Total credit	Net (9)-
1	2	3	4	5	6	7	8	9 (2)to(8) except (6)	10	11 (9)+(10)	12	13	14	15	1
1961-62	32.80	21.87	41.55	1.08	(3.0)	24.35	8.93	130.58	84	214.58	5.11	56.86	45	106.97	23
62-63	57.42	27.36	51.98	-0.87	(1.20)	24.99	11.52	172.40	88	260.40	6.79	57.50	48	112.29	60
63-64	71.51	28.08	53.35	2.04	(3.90)	33.26	14.85	203.09	93	296.09	8.03	71.30	57	130.33	72
64-65	44.61	29.19	55.46	1.60	(4.30)	39.81	19.17	189.84	98	287.84	13.01	59.08	55	127.09	62
65-66	94.84	26.91	51.12	18.11	(8.80)	37.35	24.73	253.06	103	356.06	15.97	101.46	61	178.43	74
66-67	41.54	42.48	80.71	1.44	(5.80)	35.35	31.89	201.52	109	310.52	20.98	94.62	68	183.60	17
67-68	53.06	44.97	85.44	-0.65	(5.90)	62.99	41.15	286.96	114	400.96	28.26	133.00	74	235.26	51
68-69	89.52	55.08	104.65	-4.90	(5.00)	57.32	53.08	354.75	120	474.75	37.58	206.01	80	323.59	31
69-70	110.84	58.53	111.20	-1.80	(7.70)	46.59	68.47	393.83	127	520.83	49.99	217.81	87	354.80	39
70-71	113.58	65.97	125.34	16.50	(17.10)	58.26	88.33	467.98	133	600.98	66.48	185.85	93	345.33	122
71-72	133.32	62.80	119.32	37.27	(21.30)	67.08	113.94	533.73	140	673.73	88.42	220.16	99	407.52	126
72-73	210.27	76.70	145.73	60.03	(34.30)	108.72	146.99	784.44	148	896.44	117.60	239.90	177	534.50	213

Table I Continued

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1973-74	253.86	88.87	168.85	84.70	(48.40)	70.69	182.01	848.98	155	1003.98	175.77	142.34	91	409.11	439.87
74-75	6.07	85.27	162.01	50.40	(28.80)	108.18	193.21	605.98	165	770.98	210.15	197.45	78	485.60	120.38
75-76	103.42	105.55	200.54	105.35	(60.20)	150.71	296.15	961.72	172	1133.72	278.21	202.58	82	562.79	398.93
76-77	376.13	131.02	248.93	70.52	(40.30)	166.93	386.26	1379.79	181	1560.79	350.69	433.41	86	870.10	509.69
77-78	232.08	147.92	281.04	91.18	(52.10)	181.75	604.64	1538.01	192	1730.01	500.41	307.23	98	905.64	632.37
78-79	472.06	170.75	324.42	107.97	(61.70)	267.24	737.00	2142.00	200	2342.00	741.52	332.48	119	1192.00	950.00
79-80	432.00	193.22	367.11	145.95	(83.40)				213		760.96				

Note: Postal Savings are a part of small savings.

APPENDIX TABLE II: AGRICULTURAL FINANCIAL ASSETS AND LIABILITIES FLOWS

(Rs. Crores)

Years	Currency	Life insurance	Provident fund etc.	Small savings and "others"	Co-op. shares and deposits	Commercial bank deposits	Gross formal financial savings	Commercial bank credit	Co-operative credit	Government credit	Total credit	Net financial savings
	1	2	3	4	5	6	7 (1)to(6)	8	9	10	11	12
1961-62	18.70	13.38	20.03	0.80	24.35	5.09	82.35	2.22	56.86	45	104.08	-21.73
62-63	33.87	16.74	25.05	- 0.64	24.99	6.80	106.81	3.04	57.50	48	108.54	- 1.73
63-64	43.62	17.18	25.71	1.50	33.26	9.06	130.33	4.17	71.30	51	126.47	3.86
64-65	28.10	17.88	26.73	1.18	39.81	12.08	125.78	5.80	59.08	55	119.88	5.90
65-66	61.65	16.47	24.64	13.35	37.35	16.07	169.53	7.71	101.46	61	170.17	- 0.64
66-67	27.83	26.00	30.90	1.06	25.35	21.37	142.51	10.71	94.62	68	173.33	-30.82
67-68	36.61	27.52	41.18	- 0.48	62.99	28.39	196.21	14.66	133.00	74	221.66	-25.45
68-69	63.56	33.71	50.44	- 3.61	57.32	37.69	239.11	20.10	206.01	80	306.11	-67.00
69-70	80.92	35.82	53.60	- 1.33	46.59	49.98	265.58	35.52	217.81	87	340.33	-74.75
70-71	85.18	40.37	60.41	12.16	58.26	66.25	321.63	29.71	185.85	93	308.56	13.07
71-72	102.66	38.43	57.51	27.47	67.08	87.73	380.88	51.67	220.16	99	370.83	10.05

Table II Contirued

	1	2	3	4	5	6	7	8	9	10	11	12
72-73	161.91	46.94	70.24	44.24	108.72	113.18	545.23	70.78	239.90	177	487.68	57.55
73-74	195.47	54.39	81.39	62.42	70.69	140 15	604.51	86.69	142.34	91	320.03	284.48
74-75	4 .68	52.19	78.09	37.14	108.18	148.77	429.05	173.35	197.45	78	449.80	-19.75
75-76	79.63	64.60	96.66	77.64	150.71	228.04	697.28	215.38	202.58	82	449.96	197.32
76-77	289.62	80.18	119.96	51.97	166.93	297.42	1006.10	211.82	433.41	86	731.23	145.16
77-78	178.70	90.53	135.46	67.20	181.75	465.57	1165.86	455.71	307.23	98	860.94	304.92
78-79	363.49	104.50	156.37	79.57	267.24	567.49	1600.99	540.71	332.48	119	991.00	609.99
79-80		118.25	176.95	107.57				472.05				

Appendix Table III: Shares of states in selected financial stocks held by rural households, 1971.

(per cent)

States	Commercial bank deposits	Life insurance fund	Provident fund	Post-office deposits	Commercial bank credit	Government credit
Andhra Pradesh	7	6	2	0.7	10.19	3.52
Assam	1	3	8	3	-	3.04
Bihar	14	7	10	7	1.23	5.66
Gujarat	6	8	5	4	13.24	6.93
Haryana	1	1	0.5	2	2.57	1.51
Himachal Pradesh	0.2	0.5	1	2	0.36	-
Jammu & Kashmir	0.4	0.4	0.9	1	0.01	0.95
Karnataka	3	17	2	0.9	17.17	9.52
Kerala	17	9	9	2	15.90	1.78
Madhya Pradesh	1	3	6	2	3.31	3.60
Maharashtra	6	5	8	6	5.97	15.75
Orissa	0.2	0.7	2	4	0.53	1.90
Punjab	10	2	2	9	7.51	3.29
Rajasthan	4	7	1	0.6	1.84	3.86
Tamil Nadu	4	7	7	3	8.93	9.82
Uttar Pradesh	12	11	11	28	8.05	14.79
West Bengal	10	12	22	24	1.65	6.34

APPENDIX TABLE IV: FINANCIAL SAVINGS OF RURAL HOUSEHOLDS - STATEWISE, 1971- 72

(Rs. Crores)

States	Currency	Life insurance premia	Provident fund	Small savings	Co-op. shares and deposits	Commercial bank Deposits	Gross formal financial savings	Commercial bank credit	Co-op. rative credit	Government credit	Total credit	Net financial savings	Informal financial savings
	1	2	3	4	5	6	7	8	9	10	11	12	
Andhra Pradesh	9.32	4.0	2.39	0.26	2.59	7.98	26.54	10.19	10.95	3.75	24.89	1.65	25.3
Assam*		2.0	9.55	1.12	-		15.17	-	-	3.21	3.21	11.96*	
Bihar	18.70	4.0	11.93	2.69	1.13	16.00	54.45	1.23	9.83	5.84	16.90	37.55	3.4
Gujarat	8.03	5.0	5.97	1.49	17.30	6.87	44.66	13.24	31.53	8.35	53.12	-8.46	16.9
Haryana	1.35	1.0	0.60	0.75	1.95	1.15	6.80	2.57	8.02	1.76	12.35	-5.55	1.6
Himachal Pradesh*		0.0	1.19	0.75	-		2.47	0.36	-	-	0.36	2.11*	
Jammu & Kashmir*		0.3	1.07	0.37	-		2.74	0.01	-	1.00	1.01	1.73*	
Karnataka	3.99	11.0	2.39	0.34	4.61	3.41	25.74	17.17	17.91	10.24	45.32	-19.58	9.8
Kerala	22.69	6.0	10.74	0.75	3.91	19.41	63.53	15.90	7.60	1.80	25.30	38.23	1.7
Madhya Pradesh	1.35	2.0	7.16	0.75	4.32	1.15	16.73	3.31	16.12	3.76	23.19	-6.46	8.4
Maharashtra	8.03	3.0	9.55	2.24	12.80	6.87	42.49	5.97	94.51	16.58	117.06	-74.57	9.2
Orissa	0.27	0.4	2.39	1.49	1.18	0.23	5.96	0.53	5.54	2.12	8.19	- 2.23	4.0
Punjab	13.48	1.0	2.39	3.35	9.16	11.52	40.90	7.51	13.18	3.66	24.35	16.55	2.3
Rajasthan	5.34	4.0	1.19	0.22	2.40	4.56	17.71	1.84	5.91	4.29	11.99	5.72	12.6
Uttar Pradesh	16.01	7.0	13.13	10.44	10.83	13.69	71.10	8.05	32.54	15.74	56.33	14.77	25.8
West Bengal	13.48	8.0	26.25	8.94	1.41	11.52	69.60	1.65	0.83	6.68	9.16	59.84	5.1

* Information for Assam, Himachal Pradesh and Jammu and Kashmir is not complete.

Appendi. Table V: Share of cultivator households in rural financial assets and liabilities, 1971

(per cent)

States	Commercial bank deposits	Life insurance fund	Provident fund	Post office deposits	Commercial bank credit	Government credit
Andhra Pradesh	0.99	62.07	25.76	57.14	0.98	0.93
Assam	-	83.33	68.83	82.76	-	0.94
Bihar	0.98	81.13	72.24	84.85	0.98	0.95
Gujarat	0.52	75.86	29.77	36.36	0.99	0.97
Haryana	0.72	70.00	38.46	6.25	1.00	0.83
Himachal Pradesh	-	85.71	74.07	85.00	-	0.95
Jammu & Kashmir	-	66.67	80.00	76.92	1.00	0.93
Karnataka	0.92	59.07	50.00	37.50	0.83	0.99
Kerala	0.96	87.50	77.27	86.36	0.99	0.96
Madhya Pradesh	0.77	45.00	37.65	52.17	1.00	0.95
Maharashtra	0.34	49.28	19.55	59.02	1.00	0.90
Orissa	1.00	90.00	63.64	89.47	1.00	0.96
Punjab	0.56	37.14	21.82	47.73	1.00	0.86
Rajasthan	0.85	45.54	37.50	16.67	0.93	0.90
Tamil Nadu	0.98	57.94	29.78	60.00	0.95	0.96
Uttar Pradesh	0.68	52.10	51.85	77.61	1.00	0.94
West Bengal	0.71	43.50	42.88	90.43	1.00	0.95

APPENDIX TABLE: VI FINANCIAL SAVINGS OF AGRICULTURAL HOUSEHOLDS--STATEWISE, 1971-72

(Rs. Crores)

States	Currency	Life insurance premia	Provident fund	Small savings	Co-op. shares and deposits	Commercial bank deposits	Gross formal financial savings	Commercial bank credit	Co-operative credit	Government credit	Total credit	Net financial savings
	1	2	3	4	5	6	7	8	9	10	11	12
Andhra Pradesh	9.22	2.48	0.62	0.15	2.59	7.88	22.94	8.82	10.95	3.52	23.29	- 0.35
Assam*		1.66	6.59	0.93	-		10.58	-	-	3.04	3.04	7.54*
Bihar	18.33	3.24	8.59	2.22	1.13	15.67	49.18	1.06	9.83	5.66	16.55	32.63
Gujarat	4.15	3.80	1.79	0.54	17.30	3.55	31.13	11.58	31.53	6.93	50.04	-18.91
Haryana	0.97	0.70	0.23	0.05	1.95	0.83	4.73	2.27	8.02	1.51	11.80	- 7.07
Himachal Pradesh*		0.26	0.88	0.64	-		2.28	-	-	-	-	2.28*
Jammu & Kashmir*		0.20	0.86	0.28	-		2.14	0.01	-	0.95	0.96	1.18*
Karnataka	3.67	6.49	1.20	0.13	4.61	3.13	20.23	12.59	17.91	9.52	40.02	-19.79
Kerala	21.78	5.28	8.27	0.65	3.94	18.62	58.54	13.91	7.60	1.78	23.29	35.25
Madhya Pradesh	1.02	0.90	2.72	0.39	4.32	0.88	10.23	2.93	16.12	3.60	22.65	-12.42
Maharashtra	2.75	1.47	1.91	1.22	12.80	2.35	22.60	5.28	94.51	15.75	115.54	-92.94
Orissa	0.27	0.38	1.53	1.33	1.18	0.23	4.90	0.47	5.54	1.90	7.91	- 3.01
Punjab	7.55	0.37	0.53	1.61	9.16	6.45	25.67	6.64	13.18	3.29	23.10	2.57
Rajasthan	4.53	1.84	0.45	0.04	2.40	3.87	13.13	1.51	5.91	3.86	11.28	1.85
Tamil Nadu	5.23	2.32	2.42	0.67	5.96	4.47	21.07	7.49	28.02	9.82	45.33	-24.26
Uttar Pradesh	10.89	3.64	6.83	8.14	10.83	9.31	49.64	7.12	32.54	14.79	54.45	- 4.81
West Bengal	9.59	3.52	11.29	8.05	1.41	8.21	42.07	1.46	0.83	6.34	8.63	33.44

* Information for Assam, Himachal Pradesh and Jammu and Kashmir is not complete.

Year	Saving of the household sector in finance Assets (Gross)	Currency	Bank deposits	L.I.C. fund	P.F. funds	Corporate & co-operative securities	Financial Liabilities of the household sector	Saving of the household sector in financial Assets (Net)
	1	2	3	4	5	6	7	8
1961-62	650.4	99.4	207.4	72.9	113.5	69.2	129.0	521.4
62-63	737.9	174.3	176.7	91.2	128.8	23.7	226.4	511.5
63-64	1025.4	216.7	293.2	93.6	155.4	112.8	274.6	750 .8
64 -65	911.0	135.2	336.4	97.3	181.5	12.0	250.3	660.7
65-66	1091.0	287.4	363.7	89.7	198.2	19.0	253.2	837.8
66-67	1086.2	125.9	437.8	141.6	206.9	9.0	337.3	748.9
67-68	1178.0	160.8	408.1	149.9	261.8	32.6	358.1	819.9
68-69	1321.0	271.3	411.4	183.6	267.0	7.5	501.9	819.1
69-70	1514.2	335.9	586.8	195.1	350.8	- 5.6	646.9	867 3
70-71	1948.1	344.2	775.9	219.9	416.2	17.0	618.8	1328.3
71-72	2347.6	404.0	1023.9	251.2	474.3	17.8	724.3	1623.3
72-73	3004.2	637.2	1214.4	306.8	523.4	21.9	635.9	2368.3
73-74	3631.5	769.3	1510.9	355.5	603.0	- 5.3	830.7	2800.8
74-75	3402.1	18.4	1653.9	343.9	786.6	58.5	801.4	2600.7
75-76	4753.7	313.4	2787.4	422.2	1070.3	21.6	1075.4	3678.3
76-77	6905.1	1139.8	3920.0	524.1	1171.6	-13.2	1710.3	5194.8
77-78	7112.6	703.3	3535.2	591.7	1315.8	199.7	1669.5	5443.1
78-79	9240.1	1430.5	4309.4	683.0	1605.3	201.0	2495.1	6745.0
79-80	10092.5	1309.1	4510.4	772.9	1764.8	267.9	3217.2	6875 3
80-81	11703.2	1665.7	5679.7	875.3	2069.1	226.8	3116.1	8587.1

APPENDIX TABLE VII: SAVINGS OF THE HOUSEHOLD SECTOR IN THE FORM OF FINANCIAL ASSETS (Rs. Crores)

APPENDIX TABLE VIII

RURAL GROSS DOMESTIC PRODUCT AT FACTOR COST (Current prices)

(Rs. Crores)

Year	Agriculture	Non-agriculture, rural	Rural
1961-62	6966	2264	9230
1962-63	7111	2311	9422
63-64	8235	2676	10911
64-65	10091	3280	13371
65-66	9798	3184	12982
66-67	11713	3807	15520
67-68	14542	4726	19268
68-69	14146	4597	18743
69-70	15539	5050	20589
70-71	16727	5436	22163
71-72	17320	5629	22949
72-73	19009	6178	25187
73-74	25583	8314	33897
74-75	28122	9140	37262
75-76	25963	8438	34401
76-77	27777	9028	36805
77-78	31836	10347	42183
78-79	31618	10276	41894

APPEN_IX TABLE IX: RURAL SAV_NGS, INCOME AND POPULATION, 1971-72

States	Total savings (Rs.crores)			Agricultural income (Rs. crores)	Population (million)	
	A	NAR	R		A	R
	1	2	3	4	5	6
Andhra Pradesh	62.25	9.2	71.45	1,463.28	28.08	35.10
Assam						
Bihar	156.83	10.72	167.55		50.14	50.72
Gujarat	99.99	24.35	124.34	937.59	16.13	19.20
Haryana	57.53	8.96	66.49	566.32	6.53	8.26
Himachal Pradesh						
Jammu & Kashmir						
Karnataka	117.81	7.51	125.32	984.95	18.63	22.18
Kerala	89.25	5.38	94.63	579.03	10.91	17.88
Madhya Pradesh	121.48	11.96	133.44	1,256.20	31.03	34.87
Maharashtra	22.16	29.37	51.53	1,081.89	29.15	34.70
Orissa	33.19	4.38	37.57	653.06	17.29	20.10
Punjab	103.87	32.40	136.27	877.10	8.27	10.34
Rajasthan	122.75	7.67	130.42	795.11	18.46	21.22
Tamil Nadu	51.74	23.21	74.95	1,066.96	22.70	28.73
Uttar Pradesh	308.49	46.88	355.37	2,511.68	66.08	75.95
West Bengal	113.94	42.10	156.04	1.464.50	27.35	33.35

APPENDIX TABLE X: MATERIAL INPUTS IN AGRICULTURE

(Rs. crores)

	Increase in annual value of material inputs	Increase in working capital on assumption of	
		4 month turnover	6 month turnover
1961-62	90	30	45
62-63	122	40	61
63-64	114	38	57
64-65	285	94	143
65-66	105	35	53
66-67	465	153	233
67-68	416	137	208
68-69	37	12	19
69-70	439	145	220
70-71	315	104	167
71-72	279	92	140
72-73	552	182	256
73-74	1247	412	623
74-75	1644	542	822
75-76	-ve	-ve	-ve
76-77	663	219	331
77-78	674	222	337
78-79	465	153	232

Note: Increase of inputs in 1965-66 is the value of inputs in 1965-66 minus the value of inputs in 1964-65.

Source: CSO National Accounts Statistics, disaggregated statements.

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ABBREVIATIONS

1) CSO : Central Statistical Organisation

2) NCAER : National Council of Applied Economic Research.

3) RBI : Reserve Bank of India

4) BSRs : Basic Statistical Returns

SOME ASPECTS OF INTER-STATE DISPARITIES IN GROSS VALUE OF CROP OUTPUT PER HECTARE : 1960-61 TO 1980-81

V.N. MISRA*

It is rather tempting to have more empirical evidence on inter-State disparities in the gross value of crop output per hectare, particularly of the recent period, not because the crop production contributes substantially to the net domestic product of the States, but because of the conflicting evidence on the subject. It has been observed that the inter-State disparities in production per hectare and per capita production of major food crops experiencing technological changes have widened[1], probably because the new technology has a built-in bias towards promoting inequality among regions due to the emphasis on modern inputs, which provide better response in areas having assured irrigation. Whereas, the analysisof 72 wheat growing districts showed that the bulk of disparities is caused by the "region effect", representing the peculiarities of specific regions that are stable over time[2], rather than the technological changes. The other evidence is that about three-fourth of disparities

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*Directorate of Economics & Statistics, Ministry of Agriculture, Government of India, New Delhi. The views expressed in the Paper are personal. The major part of work on which the paper is based, has been done in 1976, when I was associated with the Agricultural Prices Commission.

1/Rao Hanumanta, C.H. "Technological changes and Distribution of Gains in Indian Agriculture", the Macmillan Company of India Ltd. Delhi, 1975 P. 101, Krishnaji, N., "Inter-Regional Disparities in Per Capita Production and Productivity of Foodgrains"; A preliminary Note, "Economic and Political Weekly, Vol. 33, 34 and 35, Special Number, August, 1975.

2/ For details, see Makhopadhyay, S.K., "Sources of Variation in Agricultural Productivity: A Cross Section Time Series Study in India", The Macmillan Company of India Ltd., 1976, P.64.

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in the regional income are accounted for by the price changes[3]. In view of these divergent findings, it would be interesting to have more empirical evidence to settle the issues, such as what are the trends - converging or diverging - in the inter-state disparities, whether the changes in gross value of crop output per hectare among States are due to changes in productivity, denoting technology or to price changes. The paper attempts to answer these questions on the basis of State level analysis[4], which includes 12 States[5] Andhra Pradesh, Assam, Bihar, Gujarat, Jammu & Kashmir, Karnataka, Madhya Pradesh, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal.

It may, however, be mentioned that the increase in crop production is not always associated with an increase in per capita production. For this reason, it has generally been argued that both the phenomena - increase in production and per capita production - representing the volume and welfare aspects of economic

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3/Sinha, R.P., "Disparities in Regional Income: Role of Prices", Indian Journal of Agricultural Economics, Vol. XXXVI, No.4, Oct-Dec. 1981.

4/ It has been argued that the inter-regional differences in crop production caused by the new technology, when examined at State level may not appear to be significant, for the new technology is so concentrated that the State level analysis tends to conceal its nature. Therefore, smaller units such as district has been suggested for such analysis. For details, see Krishnaji, N. - op.cit. In this context, it may be mentioned that taking district as unit of analysis, would also create problem in the sense that taking districts from different regions would show larger variations, because of regional factors. In such a situation, despite the limitation of State level analysis, which has been attempted in the paper, it is expected to provide fair idea about the changes that have taken place in the gross value of crop output per hectare over the period, are because of the productivity changes or price changes.

5/ We could not include Orissa in the analysis, because of non-availability of farm harvest prices. In the case of Kerala, the predomination of plantation crops may create problems of comparability in the gross of value of crop output per hectare with the other States and it is excluded from the analysis.

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development respectively, should be examined, while studying the inter-state disparities. It is true that both the aspects depend generally on the same set of forces; but the strategic variables that determine them, need not be identical.[6] The factors such as relative cost of production and its transportation in various States are supposed to determine the crop production, whereas the per capita production is influenced by the relation between the rate of increase in population and labour force and the rate of increase in production. Indeed, the forces determining both, crop production and per capita production, are important for the understanding of the process of economic development and hence inter-state disparities too. But here our aim is rather limited - only to know whether inter-state disparities in gross value of crop output per hectare are due to productivity changes or to price changes, we have concentrated mainly on inter-state differentials in gross value of crop output per hectare rather than on the per capita production, of course without going into the determinants of gross value of crop output per hectare among the States.

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6/ Perloff, H.S. et al, "Regions, Resources, and Economic Growth, Resources for the Future", The Johns Hopkins Press, Baltimore, 1961, P. 56.

The inter-state variations in the gross value of crop output[7] per hectare of gross cropped area have been analysed at three points of time; triennium ending 1962-63, 1972-73 and 1980-81, which are henceforth referred to as 1962-63, 1972-73 and 1980-81 respectively. By taking three years' average, weather induced fluctuations in output are expected to get eliminated.[8] The analysis has been made separately for the two periods, (1) 1962-63 and 1972-73, and (ii) 1972-73 and 1980-81.

7/ For estimating the gross value of crop output, all the major crops: rice, jowar, bajra, maize, ragi, small millets, wheat, barley, gram, tur, groundnut, castor seed, seasmum, rapeseed and mustard, linseed, cotton, jute, masta, sugarcane, potato, and tobacco have been taken into account. These crops account for about 98 percent in Uttar Pradesh, 82 per cent in Bihar, 88 percent in Jammu & Kashmir and Tamil Nadu, 84 percent Andhra Pradesh, 87 percent in West Bengal and Madhya Pradesh, 86 percent in Karnataka and Gujarat, 90 percent in Assam, 81 percent in Punjab and 75 percent in Rajasthan, of the gross cropped area during the triennium ending 1962-63.

The gross value of crop output has been estimated on the basis of farm harvest prices of States. However, the farm harvest prices of small millets are not available. Therefore, their prices were estimated by working out the relationship between the prices of small millets and other coarse grains such as jowar, bajra, maize, etc. The prices of small millets for the base year have been estimated by dividing the gross value of small millets, taken from "Distribution of Agricultural Income in India; 1960-61 and 1970-71", Economic and Scientific Foundation, New Delhi: 1973, with that of output in different States. Then these ratios are applied to coarse grains for obtaining the price for small millets. Similar approach has been adopted for Masta. Its prices have been estimated by working out relationship with jute prices. In the case of non-availability of farm harvest prices, for a particular commodity in a State, the prevailing farm harvest prices in the adjacent State have been adopted.

8/ Krishnaji, N., - op cit.

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1. GROWTH AND DISPARITY

The relative position of the States could be seen from their ranks based on the gross value of crop output per hectare in ascending order for triennium ending 1962-63, 1972-73 and 1980-81 given in Table I . The perusal of the ranks indicates two very interesting features; (i) despite considerable changes in the ranking of a few States over the period, there seems to be a remarkable stability[9/] in the relative position of Karnataka, Madhya Pradesh and Rajasthan and Tamil Nadu; Rajasthan remained at the bottom of the ladder and Tamil Nadu remained at third position in all the periods, and (ii) noteworthy is the improvement of Punjab from six tc two, and decline of Assam from two to six.

As regards the growth and disparity, it is interesting to observe that when the gross value of crop output per hectare on an average increased by about 144 percent between 1962-63 and 1972-73, the coefficient of variation among States declined from 36.5 percent in 1962-63 to 31.2 percent in 1972-73. But in the second period - 1972-73 and 1980-81 when the rate of increase in the gross value of crop output per hectare was about 80 percent the coefficient of variation shot up to 43.3 percent (Table 2). These trends clearly suggest that till 1972-73 inter-State disparities in the gross value of crop output per hectare have shown a declining tendency and thereafter it seems to have started increasing. This could also be examined through the rate of change in the gross value of crop output per hectare over the period from its initial level. The correlation coefficient between the gross value of crop output per hectare in 1962-63 and their percentage increase in 1972-73 turned out to be negative (r = -0.48) showing declining disparities in the first period but the reverse has happened in the

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9/ The relative position of economic status of different regions in relation to the national average changes only vary gradually over the period. See, Nair, K.R.G. "Regional Experience in a Developing Economy", Wiley Eastern Limited, 1982 P.24.

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second period; the gross value of crop output per hectare in 1972-73 has shown positive relationship (r = 0.42) with their percentage increase in 1980-81, suggesting that the disparities increased in the later period. It may therefore, be infered that a faster increase in the gross value of crop output per hectare has been accompanied by narrowing tendency of inter-State disparities.

Having seen the relationship between the growth and disparity in general, it is worth examining the direction of changes for each State which have been done by estimating the State relatives (i.e. the gross value of crop output per hectare of the State divided by the overall average of the States multiplied by 100). On the basis of these relatives, the States are then grouped into two. First, the States where the values are less than 100 in the initial years, and Second, the States having the value over 100. In the phase of decreasing disparities, the States in the first group are expected to show an increase in their relatives over the period, reverse would be the case for the States in the group second. One would expect exactly opposite to happen in the phase of increasing disparities. It would be possible on the basis of this analysis, to locate the States, which are responsible for convergence/divergence of the disparities in the two periods. The results of State relatives for different States separately for two periods are given in Table 3. It indicates in the States of group first - Rajasthan, Karnataka and Gujarat, improved their status, whereas in the States of group second, Andhra Pradesh, Bihar, Tamil Nadu, Assam and West Bengal lost their status from the initial years to the terminal years in the first period. This resulted into the narrowing tendency of disparities, as mentioned above. In the second period, among the States having lower gross value of crop output per hectare than the overall average, only Madhya Pradesh and Gujarat gained in their relatives by 14 and 21 percent respectively over the period. But the increases have been quite sharp in Punjab, Bihar, Tamil Nadu and West Bengal which have higher gross value of crop output

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per hectare than that of the overall average. In these States such sharp increases seem to have played an important role in raising the disparities in the second period.

The finding of narrowing down inter-State disparities in the first period; 1962-63 to 1972-73, characterising the early phase of new technology, and started increasing since then, shown by higher coefficient of variation in 1980-81 than that of 1972-73 is, however, based on the analysis of three points of time. Therefore, it is rather difficult to draw any definite conclusion about the pattern of disparities that follow for the entire period. With this limitation in view, it may however, be inferred that trends broadly indicate the pattern of 'U' shape curve for the disparities over the period in the process of agricultural development in the country. This observation seems to be in conformity with finding based on the analysis of the net domestic products of the States[10/].

2. DISPARITY: OUTPUT AND PRICE

The differentials based on the gross value of crop output per hectare consist of two components; physical output per hectare (productivity) and its price. The former is expected to catch the effect of technology and the resource base of the regions in terms of land, labour, etc. These forces influence productivity unevenly. Uneven growth in production of different crops results in the relative prices of various crops changing, consequently the output of crops in which the technological changes have taken place, tend to increase more than the average of all the States resulting into inter-State disparities in the gross value of crop output per hectare. However, the forces which are marking differential rates of change among States are so complex and so inter related that it is rather difficult to directly translate them into State growth effects. In such a situation it is

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10/ For details see Nair, K.R.G. ibid.

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useful to do an "accounting" job[ii/]. This has been done in the first instance by estimating the gross value of crop output per hectare at constant prices, so as to have mainly the effect of productivity change on inter-state disparities. The estimate based on at constant prices has been converted into the State relatives and then changes over the period have been worked out. The results are given in Table 4. It indicates that though the States with lower value of crop output per hectare in group first, have shown improvements in the terminal years over the initial years in the first period, but the improvements have been quite substantial in the States of group second. This is evident from the fact that among the States of group second, the changes that have taken place in the first period are quite different in both the situations, i.e. at the constant prices and current prices. For instance in Andhra Pradesh, Tamil Nadu and Assam there have been decreases in their relatives at current prices, but at constant prices, the relatives have shown the increases over the period. It is the latter that has raised the inter-state disparities in the first period. The implication is that if more productivity changes would have taken place among the States, in the first period, the inter-state disparities would have been higher than what has been observed at current prices. This could be seen from the coefficient of variation, which turns out to be higher, being 45.6 percent at constant prices, as against 31.2 percent at current prices. It may, therefore, be inferred that in the first period, the differential price movements among States have exerted dampening effect on inter-state disparities. Such effect of price changes could not take place in the second period, indicated by the fact that the coefficients of variation are more or less at the same level - 43.2 percent at current prices and 42.5 percent at constant prices - probably because the relatives of gross value of crop output caused by the price changes over period have been showing only increases in both the groups of States, resulting into lower magnitude of differential/improvements among States.

/price

11/ Perloff, H.S. et al - op cit.

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In order to provide empirical support to the above inference about the effect of price changes on inter-state disparities, we have done an other "accounting" job. The gross value of crop output per hectare for 1962-63 has been estimated on the basis of 1972-73 prices, and similarly for 1972-73, it has been evaluated at 1980-81 prices, so as to have some idea about the price changes on inter-state disparities. The gross value of crop output per hectare so measured, has been converted into State relative as has been done in the above exercise. Then the changes in terminal years over the initial years in both periods have been worked out. The results are given in Table 5. It indicates that in the first period, among the States with higher gross value of crop output per hectare than that of over-all average (i.e. group second), there have been the decreases in their relatives over the period except Punjab and West Bengal where improvements took place. Among the States of group one, substantial improvements have taken place in Rajasthan and Gujarat over the period. These changes seem to be responsible for the dampening effect of price changes on inter-state disparities. In the second period, such effect could not take place because of lower magnitude of differential of price movements among States.

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3. CONCLUSION.

The inter-state disparities in gross value of crop output per hectare showed converence between 1962-63 and 1972-73. However, between 1972-73 and 1980-81, diverging trend has been observed. In the early seventies the inter-state disparities in gross value of crop output per hectare would have been higher, if mere productivity changes would have taken place. It is the differential price movement among crops that had dampening effect on inter-state disparities in the first period: 1962-63 to 1972. In the second period, it appears that movement of prices of commodities displaying faster rate of growth relative to the prices of commodities witnessing lesser order of growth, did not experience the same order of decline, as in the first period. This could have happened apart from the other factors due to substitution possibilities (for example, rice and wheat being substitute for coarse grain) or due to demand for such commodities failing to grow on account that the prices remain very high (for example pulses).

TABLE -1.

Ranking of the States in Terms of gross value of crop output per hectare in ascending order.

State	Rank in Terms of per hectare gross value of crop output.		
	1962-63	1972-73	1980-81
1. West Bengal	1	2	1
2. Assam	2	4	6
3. Tamil Nadu	3	3	3
4. Uttar Pradesh	4	6	5
5. Bihar	5	8	9
6. Punjab	6	1	2
7. Jammu & Kashmir	7	5	4
8. Andhra Pradesh	8	9	7
9. Gujarat	9	7	8
10.Karnataka	10	10	10
11.Madhya Pradesh	11	11	11
12.Rajasthan	12	12	12

TABLE - 2

Gross value of crop output per hectare in different States

State	1962-63	1972-73	1980-81
1. Andhra Pradesh	311	695	1550
2. Assam	496	1086	1634
3. Bihar	370	785	1208
4. Gujarat	260	860	1484
5. Jammu & Kashmir	337	970	2134
6. Karnataka	226	645	1065
7. Madhya Pradesh	207	420	892
8. Punjab	388	1213	2869
9. Rajasthan	129	400	699
10. Tamil Nadu	483	1127	2705
11. Uttar Pradesh	375	919	1736
12. West Bengal	588	1204	3136
AVERAGE	311	756	1403
Coefficient of variation (%)	36.5	31.2	43.3

TABLE - 3

State Relatives of gross value of crop output per hectare.

State	State Relatives at current prices 1962-63	1972-73	% increase in State Relatives	State	State Relatives at current prices 1972-73	1980-81	% change in State Relatives
1. Rajasthan	41.6	52.9	(+)27.2	1. Rajasthan	52.9	49.8	(-) 5.8
2. Madhya Pradesh	66.8	55.6	(-)16.8	2. Madhya Pradesh	55.6	63.6	(+)14.4
3. Karnataka	72.9	85.3	(+)17.0	3. Karnataka	85.3	75.9	(-)11.0
4. Gujarat	83.9	113.8	(+)35.6	4. Andhra Pradesh	92.0	110.5	(+)20.0
5. Andhra Pradesh	100.3	92.0	(-)8.3	5. Bihar	103.8	86.1	(-)17.1
6. Jammu & Kashmir	108.7	128.3	(+)18.0	6. Gujarat	113.8	105.8	(-) 7.0
7. Punjab	118.7	160.5	(+)35.2	7. Uttar Pradesh	121.6	123.7	(+) 1.8
8. Bihar	119.4	103.8	(-)13.0	8. Jammu & Kashmir	128.3	152.1	(+)18.5
9. Uttar Pradesh	121.0	121.6	(+)0.5	9. Assam	143.7	116.5	(-)18.9
10. Tamil Nadu	155.8	149.1	(-)4.3	10. Tamil Nadu	149.1	192.8	(+)29.3
11. Assam	160.0	143.7	(-)10.3	11. West Bengal	159.3	223.5	(+)40.4
12. West Bengal	189.9	159.3	(-)16.0	12. Punjab	160.5	203.6	(+)26.9

TABLE- 4

State Relatives of gross value of crop output per hectare.

State	State Relatives in 62-63 output at current prices.	State Relatives in 72-73 output at 62-63 prices (constant prices)	% change in State relatives	State	State Relatives in 72-73 output at current prices	State Relatives in 80-81 output at 72-73 prices (constant prices)	% change in State relatives
1. Rajasthan	41.6	59.9	(+)44.1	1. Rajasthan	52.9	44.8	(-)15.3
2. Madhya Pradesh	66.8	51.8	(-)22.4	2. Madhya Pradesh	55.6	51.2	(-)7.8
3. Karnataka	72.9	87.7	(+)20.3	3. Karnataka	85.3	75.9	(-)11.0
4. Gujarat	83.9	105.0	(+)25.2	4. Andhra Pradesh	92.0	112.4	(+)22.2
5. Andhra Pradesh	100.3	103.4	(+)13.0	5. Bihar	103.8	115.7	(+)11.5
6. Jammu & Kashmir	108.7	130.5	(+)20.1	6. Gujarat	113.8	155.8	(+)36.9
7. Punjab	118.7	155.5	(+)31.0	7. Uttar Pradesh	121.8	110.0	(-) 9.7
8. Bihar	119.4	99.4	(-)16.7	8. Jammu & Kashmir	128.3	103.8	(-)19.1
9. Uttar Pradesh	121.0	92.7	(-)23.4	9. Assam	143.7	108.5	(-)24.5
10. Tamil Nadu	155.8	168.3	(+) 8.0	10. Tamil Nadu	149.1	164.1	(+)10.1
11. Assam	160.0	265.8	(+)66.1	11. West Bengal	159.3	224.3	(+)40.9
12. West Bengal	189.9	174.8	(-) 8.0	12. Punjab	160.5	188.0	(+)17.7

TABLE - 5

State Relatives of gross value of crop output per hectare

State	State Relatives 1962-63 output at current prices	State Relatives 62-63 output at 72-73 prices	% change in State relatives	State	State Relatives 1972-73 output at current prices	State Relatives 1972-73 output at 1980-81 prices	% change in State relatives
1. Rajasthan	41.6	43.9	(+)105.5	1. Rajasthan	52.9	97.7	(+)184.7
2. Madhya Pradesh	66.8	62.6	(-) 93.7	2. Madhya Pradesh	55.6	102.9	(+)185.2
3. Karnataka	72.9	61.5	(-) 84.4	3. Karnataka	35.3	122.3	(+)143.3
4. Gujarat	83.9	112.4	(+)134.0	4. Andhra Pradesh	92.0	206.2	(+)224.3
5. Andhra Pradesh	100.3	86.4	(-) 85.8	5. Bihar	103.8	125.9	(+)121.3
6. Jammu&Kashmir	108.7	80.1	(-) 73.7	6. Gujarat	113.8	163.8	(+)135.2
7. Punjab	118.7	194.4	(+)163.8	7. Uttar Pradesh	121.8	230.0	(+)188.8
8. Bihar	119.4	111.5	(-) 93.4	8. Jammu&Kashmir	128.3	125.9	(-) 1.9
9. Uttar Pradesh	121.0	95.6	(-) 79.0	9. Assam	143.7	163.2	(+)113.6
10. Tamil Nadu	155.8	141.6	(-) 90.9	10. Tamil Nadu	149.1	299.9	(+)201.2
11. Assam	160.0	150.5	(-) 94.1	11. West Bengal	159.3	207.4	(+)130.2
12. West Bengal	189.9	220.8	(+)116.3	12. Punjab	160.5	358.7	(+)223.6

TRENDS IN RURAL POVERTY AND DISTRUST OF GROWTH : SOME METHODOLOGICAL ISSUES

D.S. Tyagi*

Even in the early seventies when incidence of poverty was not a much widely researched area, doubts regarding the ability of growth process to make a significant dent on poverty and unemployment have been cast. Dantwala (1973), in a way, was summarising these feelings when he observed "The distrust of growth has had two strands : one emenating from the developing countries.... and other emerging from the disillusionment in the developing countries with the ability of their growth process to make a perceptible impact on the wide-spread poverty and unemployment". (Italics added) With the accumulation of a vast literature on poverty and unemployment in the country, this distrust in growth seems to have further increased. Various attempts have been made to ascertain the underlying trends in rural poverty, not only at all-India level but also for different States.[1] The relationship between the trends in rural poverty and growth of agricultural output has also been the main theam of many studies. Though the results obtained differ from one study to another, yet, an impression is being created/has been created that growth in agricultural output per say did not make/ cannot a significant dent on the rural poverty.

The incidence of rural poverty has, generally, been measured by taking a cut off point on the distribution of population by levels of consumption expenditure. For this purpose distribution of population by levels of consumption expenditure have been derive

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from the data thrown up by NSS consumption expenditure surveys.[2] The cut off points have been determined by adjusting the minimum levels of consumption expenditure i.e. the poverty line to price levels obtaining in different years. The consumer price index f or Agricultural Labourers (CPIAL) has been preferred for such adjustment. For examining the relationship between incidence of rural poverty and growth of agricultural output, incidence of poverty[3] (measured following the above approach) has been generally considered as a dependent variable in a multiple regression model with the growth of agricultural output as one of the explanatory variable Net domestic product at constant prices from the agricultural sector per head of rural population has also been used as an explanatory variable in some studies.[4] In these studies implicitly the changes in agricultural output or in NDP per head have been taken as proxy for agricultural/rural incomes. Such a proposition, however, is valid only if (a) marginal physical product of factor inputs remains unchanged despite the production level moving on to a higher plain on the production surface and (b) the changes in factor and product prise did not materially affect the relationship between gross income and cost of production.[5] Both these assumptio cannot be taken for granted, and even when one adopts NDP in agriculture at constant prices as indicator of agricultural income the second assumption has to be made. Further, these analysis require the assumption of terms of trade remaining unchanged.[6]

In this paper I shall be arguing that (a) NSS consumption expenditure estimates fall short of accuracy required for valid inter-temporal comparison of levels of consumption of rural poor (b) the CPIAL may overestimate the rise in the price of consumptio basket of the poor and thus estimates of rural poverty currently i

circulation cannot be taken at their face value. Even if one takes the estimates of rural poverty currently in circulation as valid, by regressing rural poverty against agricultural production, NDP per head, CPIAL etc. one may get misleading results because (c) agricultural output per head of rural population fails to reflect truly the changes in rural incomes, and (d) due to terms of trade for the agricultural sector moving differently in different States the real income of rural population of certain States may show a decline when the NDP shows an increase. For the purpose of illustration, we shall elaborate the case of three States viz. Punjab, Gujarat and West Bengal. Punjab represents a region where main source of agricultural growth has been the technological break-through and the prices of commodities produced in the region have not been depressed because of rising demand, Gujarat represents a case where agricultural output has moved, by and large, on the same production surface but due to supplies of the commodities produced in this region lagging for behind the demand, the prices have been moving at a very fast rate. West Bengal would reflect the case of a region where neither the growth process in the agricultural sector has been sustained by technological break-through nor the region has been lucky to have a rising demand for its main products.

II. Trends in Incidence of Rural Poverty

Ahluwalia (77) has estimated incidence of rural poverty from 1957-58 to 1973-74 in different States of the country. The percentage of rural population in poverty in different States in any given year indicated large disparities (Table 1). For example in 1971-72, while at all-India level 49.1 per cent of the population was estimated to be in poverty, such a percentage for West Bengal

was placed at 63.3, at 45.7 for Gujarat and at 22.3 for Punjab and Haryana. For period 1957-58 to 1973-74, the estimates of rural poverty in case of West Bengal showed a significant trend increase. On the other hand in case of Punjab and Haryana to trend in incidence of poverty was suggested by the observations and similarly in case of Gujarat the time trend variable did not turn out significant.

Ahluwalia[7] recently using the 32nd round NSS Consumption Expenditure Survey for 1977-78, has worked out the percentages of population in poverty in different States. With the inclusion of 1977-78, the results regarding trends in the incidence of poverty in different States are reported to have undergone significant changes. In the case of Punjab and Haryana, the incidence of poverty shows a perceptible decline. In case of Gujarat, also the series indicates a declining trend. However, in case of West Bengal the incidence of rural poverty has shown a significant increase.

III. On the Accuracy of NSS Estimates

The NSS estimates of per caput annual consumption and those of per caput availability indicates a divergence. The relevant data are presented in Table 2. It would be seen that, in 1960-61 and 1961-62, the annual per caput consumption of foodgrains in the country was estimated by NSS at 225.7 kg. and 220.7 kg. respectively. as against the availability figures of only 171 kg. for 1969 and 168.2 kg. for 1962. One wonders from where this much foodgrain came as the NSS estimate worked out to be 20 per cent higher than even the 'gross production + imports'. The NSS estimates in 1960-61 and 1961-62 were higher than the official availability estimates by over 31 per cent.[8] And if one were to consider the fact that NSS estimates pertain to only household consumption, while official

estimates relate to total availability, the difference would be still larger. Since then, the differences between the two have narrowed down. In 1973-74, according to NSS, the annual per caput consumption of foodgrains was at 185.3 kg. as against officially estimated availability of 164.6 kg. in 1974. This gives a divergence of only to 12 per cent, However, such a divergence could arise if in seventies the share of government consumption was larger, i.e. less grain was available for private consumption, stocks held privately by trade and farmers were higher than in the sixties or due improvement in coverage and methodology of estimating the production.

Gould this divergence be due to the share of government consumption increasing in the total? The share of government consumption in the total consumption of food crops was less than 0.5 per cent in 1973-74, and thus the observed divergence cannot be explained by the changes in the government's share. If between 1960-61 and 1970-71 and the latter year and 1973-74 stocks held privately by traders and producers had risen, then the official figures of availability would exaggerate the actual availability for consumption. Let us consider the facts.

Private trade in the seventies handled a much lower share of foodgrain trade than in the early sixties, and so the chances of the share of the stocks held by trade in the total availability showing an increase are fairly remote. No doubt, the holding capacity of producers in certain areas may have improved during the period. But in these very areas, due to production certainty the farmers were keeping a very small amount of produce to be carried from one year to another. The positior now is that most of them are unwilling to retain even that proportion which they held in early sixties. As the availability figures are based on index numbers of production,

the possibility of change in coverage and the methodology of estimation providing an explanation for the observed divergence does not exist. Consequently, the above-observed systematic narrowing of differences between the two cannot be explained by the differences in concepts, methodology, etc. of the two. In fact, such a divergent trend could emerge only if one of the following were true.

i) official estimates of per caput availability for the early sixties were underestimates;

ii) official estimates of per caput availability for seventies were overestimates; or

iii) NSS estimates for the early sixties were over-estimates and this overestimation got moderated over the years.

If one were to assume (i) or (ii) to be the correct explanation of the observed phenomena, the implication would be that foodgrain production - on which availability figures are directly based - should have been 96.54 million tonnes instead of 82.40 million tonnes in 1961-62 or 89.12 million tonnes in place of 104.66 million tonnes in 1973-74. This would also imply that the foodgrain production in the country had increased during this period only by about 8 per cent, and not by 27 per cent as the official figures of production actually indicate. However, this not only goes against the more or less established fact that the food production in the country has increased at a rate slightly faster than the rate of growth in population, but it would also not stand scrutiny if one considers the impact of increased irrigation potential and higher use of fertilisers on production. In such a situation, one is bound to consider the extent to which there could be a possibility of (iii) being the correct explanation for the observed phenomena of divergence between NSS estimates and those of the per caput availability.

IV. Consumer Price Index for Agricultural Labourers as Deflator for Consumption Expenditure

In the absence of a consumer price index specially designed for the rural poor, the consensus now seems to be for the use of consumer price index for agricultural labourers (CPIAL) prepared by the Labour Bureau as the most appropriate for adjusting the poverty line defined at 1960-61 prices for different years. The preference for this index has emerged from the fact that the pattern of consumption of the rural poor approximates best with that of agricultural labourers. Unfortunately, this apparent closeness in the consumption pattern of the rural poor and the agricultural labourers is not sufficient to overcome the limitations which arise in the use of any such consumer price index that has not been designed for the purpose. The limitations of CPIAL, when used in poverty measurement, emerge from the following :

i) Pattern of consumption changing with the passage of time.

ii) Differences in the distribution of rural poor and that of agricultural labourers in different States.

The weights assigned to the different commodities in the construction of CPIAL refers to the period August 1956 to August 1957, though the base period for CPIAL was taken from July 1960 to June 1961. Since 1956-57, a structural change has occurred in the pattern of availability of cereals, oils and other items of consumption. It is well known that, in the case of these commodities the production of which has not increased at a significant rate, the prices have increased at a very fast rate. The grains which were earlier treated as inferior are now priced higher than the superior cereals. Owing to changes in the pattern of production and availability, there has occurred considerable change in the pattern of consumption also. For example, now people are eating more wheat --

the price of which has increased at a slower rate - and far less gram, barley, etc. - prices of which have increased at a much faster rate. Similarly, now the use of vanaspati is much more and the use of ghee is far less. It is well known that Laspayre's formula with fixed weights, as is the case with CPIAL, would tend to inflate the rise in prices of the consumption basket, when the consumption of those commodities whose prices have increased most have declined in consumption.

To illustrate this point, we present information in Table 3 on the distribution of cereal consumption, as recorded in 1956-57, for the agricultural labour households which formed the basis of weighting diagram adopted in the construction of CPIAL; and for 1973-74 for the first 9 consumer expenditure classes - i.e. upto the expenditure class of Rs.34-43. An examination of the last two columns of the table reveals that, whereas the proportion of expenditure on coarse cereals, barley, and gram has declined considerably that on wheat has shown a rise from 7.5 to 16.83 per cent. This shift in the pattern of consumption should be taken into account while using consumer price index.

To illustrate the implications of changes in weighting diagram on the consumer price index, we have prepared an index of cereal prices for 1973-74 taking 1960-61 as 100 using two different weighting diagrams. The composite index; with 1956-57 weights, gave a figure 320 for 1973-74 with 1960-61 = 100; the other composite index based on 1973-74 weights worked out to no more than 312. Thus the index based on Lespayre's formula with base year weights overstated the price rise by 8 percentage point.

I have shown elsewhere (Tyagi, 1982) that if the NSS consumption expenditure series and CPIAL are adjusted for making possible a valid inter-temporal comparison then the percentage of persons in poverty may turn out to be 10 lower than those being used in estimating trends in rural poverty.

V. Technological Change and Agriculture Incomes

In seventies the most crucial component of growth in agricultural output has been improvements in productivity, in many States. In case of crops where superior technology of crop production becomes available income could grow at a rate higher than that of output so long as production remain in the first stage i.e. elasticity output with respect to input remain greater than one. On the other hand, in case of crops where either the new technology does not exist or it is not widely adopted, one would expect the incomes to grow at a rate lower than that in output since the production process is likely to be in the second stage i.e. elasticity of output with respect to input would be less than one.

If Y is the yield per hectare, P is the per unit price of output, I is the input required and P_I is the price of input then the income (value added) would be $Y \times P - I \times P_I$ say V, and if the yield increases to y^1 and the required input increases to I^1 then the increased income would become $y^I \times P - I^I P_I$ say V^I. Whether the increase in income i.e. $\frac{V^I}{V}$ is $\gtreqless \frac{y^1}{Y}$ would depend on whether the increase in inputs (I^1/I) has been less than, more than or equal to that in yield per hectare.

The technological breakthrough in case of wheat or cotton should have made possible greater increases in yields than those required in the inputs used. On the other hand in case of commodi-

ties like jute, groundnut and even in paddy in certain States where no technological breakthroughs have not taken place one should expect the elasticity of output with respect to inputs being less then one (since law of diminishing return should have already set in). The implications of disparity in the elasticity of output with respect to inputs in case of different crops, becomes all the more important when the analysis of trends in poverty and growth is carried out at State level because in certain States growth in agricultural output have been the result of production function itself getting changed in case of some crops while in some others growth came through the upward movement on the existing production functions.

The relationship between growth in productivity and income can be worked out if precise information on the variables are available on a cross section basis. In the absence of such cross section estimates time series estimates could be used. For estimating the relationship between the growth in output and income, we have relied upon the time series data available from Comprehensive Schemes for Studying Cost of Production of Principal Crops.[9] In the case of wheat in Punjab the estimates of cost of production are available for a number of years and such estimates are also available for paddy in the case of West Bengal. The sample yield varied from 22.61 quintals to 27.91 quintal, in case of wheat in Punjab, where as in the case of paddy in West Bengal it had varied from 17.12 quintals, to 22.83 quintals during 1976-77 to 1977-78.

Information regarding quantitative use of inputs are available in respect of bullock labour, seed, fertilizers and manures, and for other inputs it is available only in value terms. For estimating the value of inputs at constant prices, the cost of such inputs for which the quantitative information were available have been worked

out by multiplying the quantities with the prices prevailing in the base year. For other inputs, it has been estimated by deflating the estimates at current prices through the input price index. The elasticity of input with respect to output turn out to be no more than 0.28 for wheat in Punjab and the analysis also suggests that had the factor and product prices remained constant with the yield of wheat increasing by 13.14 per cent between 1970-71 to 1977-78 the increase in the net income (gross income - factor cost) would have been of the order of 19.70 per cent.

In contrast to the situation of wheat in Punjab, in West Bengal the elasticity of input with respect to output in case of paddy works out at 1.146 for seventies. The analysis further indicated that with the paddy yields increasing by 23.40 per cent between 1970-71 to 1977-78 the income from paddy cultivation would have grown only by 20.27 per cent even if factor and product prices would have been kept unchanged.

It is well known that growth in agriculture output in some States have come about due to technological breakthrough in case of some crops and in many States increases in productivity has been achieved only through moving on the same production function. The growth in agricultural output per head of rural population, therefore, cannot be taken as a proxy for changes in rural incomes without caution.

VI. Terms of Trade

In case both factor and product prices also change than what would happen to income in relation to growth in output would also depend on the rate of change in the relative prices i.e. the terms of trade. If the output prices increase at rate faster than that in input prices than income would rise much faster in case the

movement is within the first stage. If reverse is the case even a decline may take place in the income despite the farm operating in the first or second stage. For example, if O (Output) = 10, Po (Output prices) = 10, I (Input) = 6 and P_I (Input price) = 8 then the income is Rs.52 (10 x 10 - 6 x 8). If both O and Po increases at the rate of 10% and I and P_I at the rate of 12 and 50 per cent respectively then the income would work out at Rs.34.60 ($10 \times \frac{110}{100} \times 10 \times \frac{110}{100} - 6 \times \frac{120}{100} \times 8 \times \frac{160}{100}$). This decline in income has taken place because the terms of trade deteriorated to 73.3 (taking the initial position at par).

The above illustration, however, indicates only the impact of a faster rate of increase in the prices of inputs as compared to that of output. In fact, rural sector not only purchases agricultural inputs but also purchases commodities for final consumption and for the purposes of capital formation.[10] Therefore, the appropriate variable to regress on the incidence of poverty would be income i.e. (value added) per head of rural population at current prices deflated by index of prices paid by the rural population for purchases made to meet their consumption and capital formation requirements. Such indices unfortunately are not readily available at state level. One can, however, get the feel of how the diverse movements in terms of trade could distort the relationship between NDP per head of rural population at constant prices and in real incomes by comparing the changes in the prices received by the agricultural sector in different States with changes in the consumer price index for agricultural labourers. In Table IV the indices of prices received by the agricultural sector in the States of Punjab, Gujarat and West Bengal are presented along with CPIAL. It would be seen from the table that whereas in West Bengal the prices received increased by 199 and 273 per cent between the

triennium ending 1961-62 to 1971-72 and between 1961-62 to 1980-81, in Punjab the price received rose by 104 and 283 per cent whereas in Gujarat it increased by 105 to 256 per cent.

On the other hand the increases in CPIAL upto early seventies have been of the order of 111 per cent in the case of West Bengal and of 94 and 109 in the case of Gujarat and Punjab respectively. The increase in the CPIAL upto the triennium ending 1981-82 have been of the order of 293 per cent in case of West Bengal and 247 and 312 per cent in case of Gujarat and Punjab respectively.

A comparison of movements in prices received and CPIAL indicates that in case of Gujarat the prices received rose at a rate faster than the CPIAL while in the case of West Bengal the reverse has happened. The implication of these divergent trends is that in the case of Gujarat rural incomes in real terms would have shown a faster rate of increase than in the case of West Bengal even if the agricultural production or NDP per head of rural population has risen by the same order in the two States. Therefore, the week relationship between agriculture growth and incidence of poverty could emerge as a consequence of movement of terms of trade. In the case Punjab if the impact of technological improvement could more than offset the impact of adverse movement of terms of trade, the incidence of poverty could show a decline with growth in agricultural output.

Conclusion

The above analysis lead to the conclusion that the estimates of rural poverty currently in circulation cannot be taken at their face value due problems of inter-temporal comparability in the consumption expenditure estimates and the limitations of CPIAL in

reflecting truly the changes in the prices faced by the poor. Both the growth in agricultural output and NDP from agricultural sector fail to reflect truly the changes in the real rural incomes because of the play of technology and of terms of trade. The disillusionment with the process of growth that emerges from the finding of a weak linkage between growth in agricultural output/NDP from agricultural sector and the decline in incidence of rural poverty thus would seem to rest on a shacky ground. For analysing the impact of growth in agricultural output i.e. agricultural incomes on the incidence of rural poverty not only the methodology for measuring rural poverty needs improvement for generating valid estimates but also an analytical frame needs to be evolved to tackle the problems that arise from technological improvements in some crops and the movement of terms of trade.

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Table 1 : Percentage of Rural Population in Poverty by States

	1957-58	1959-60	1060-61	1961-62	1963-64	1964-65	1965-66	1966-67	1967-68	1968-69	1970-71	1973-74
Andhra Pradesh	53.5	48.8	50.1	47.2	45.6	41.5	45.4	47.9	46.0	47.3	41.0	39.8
Assam	28.0	31.4	25.6	29.4	24.4	24.2	31.3	46.8	38.4	47.3	35.3	39.3
Bihar	59.7	55.7	41.5	49.9	52.3	54.3	59.4	74.4	70.9	59.4	59.0	58.4
Gujarat	*	41.5	31.6	39.7	45.7	49.8	50.7	54.1	50.8	42.8	43.8	35.6
Karnataka	41.3	48.9	39.1	35.4	50.5	55.1	63.9	59.5	56.9	58.8	47.2	46.9
Kerala	59.6	62.3	57.8	50.3	52.8	60.7	70.7	67.1	63.4	64.6	62.0	49.3
Madhya Pradesh	57.7	46.4	43.8	40.0	43.6	42.1	47.2	58.3	62.3	56.0	52.9	52.3
Maharashtra	*	54.5	48.4	43.6	48.2	59.1	57.8	63.2	57.2	54.8	46.6	49.8
Oirssa	66.6	63.4	62.4	49.3	60.0	61.9	62.1	64.2	64.7	71.2	65.0	58.0
Punjab & Haryana**	28.0	24.2	18.8	22.3	29.4	26.5	26.5	29.5	33.9	24.0	23.6	23.0
Rajasthan	33.4	N.A.	32.3	33.0	32.6	31.8	30.8	37.1	35.9	41.4	41.8	29.8
Tamil Nadu	67.8	64.4	53.9	51.0	52.0	57.4	59.5	62.7	58.1	60.6	57.3	48.3
Uttar Pradesh	52.3	36.7	37.9	35.4	56.6	53.7	47.1	55.2	60.2	46.4	40.6	47.3
West Bengal	62.3	61.4	40.4	58.3	63.3	64.0	56.5	64.3	80.3	74.9	70.1	66.0
INDIA Estimates II (Weighted Average)	53.4	48.7	42.0	42.3	49.1	50.4	51.1	57.4	57.9	53.5	49.1	47.6

* Figures for Gujarat and Maharashtra are not available separately for the year 1957-58 since NSS tabulations for that year refer to the old Bombay State including both Maharashtra and Gujarat. The poverty incidence for Bombay State is 56.2 and this figure has been used with the combined weights for Gujarat and Maharashtra to calculate the all-India weighted average.

** NSS data report a single distribution for the old Punjab State (including Haryana) upto 1963-64, after which separate distributions are reported for Punjab & Haryana. The poverty incidence for the years after 1963-64 is based on a pooling of the data for the two states, using rural populations of Punjab and Haryana as recorded in the 1971 Census as weights. It should be noted, however, the part of the old Punjab States were emerged into Himachal Pradesh and the Union Territory of Delhi. Our procedure ignores this problem but the error is likely to be extremely small.

Source : Ahluwalia (77).

Table 2 : Differences in Estimates of Per Caput Foodgrains Consumption and Availability

Year	N S S		Availability		
	Reference Period	Per Caput Annual Consumption (Kg.)	Year	Kg. per Annum	Consumption / Availability x100
(1)	(2)	(3)	(4)	(5)	(6)
1960-61	July 60- August 61	225.67	1960	164.6	
			1961	171.1	131.9
			Average	167.85	134.4
1961-62	September 61- July 62	220.7	1961	171.1	
			1962	168.2	131.2
			Average	169.6	130.1
1964-65	July 64- June 65	205.4	1964	165.4	
			1965	175.3	117.2
				Average	120.6
1972-73	July 72- June 73	186.4	1972	170.7	
			1975	154.2	120.9
			Average	162.2	114.8
1973-74	October 73- June 74	185.3	1973	154.2	
			1974	164.6	112.7
			Average	161.5	114.7

Source : For column 3 NSS reports for 16th, 17th, 19th, 27th and 28th rounds and for column 5, Food Statistics, Directorate of Economics and Statistics (1978).

Table 3 : Cereal Price Indices Based on Percentage Distribution Derived from CPIAL Weighting Diagram and Consumer Expenditure in 1973-74

Cereal	Prices[3] Per Kg. in		Price Index for 1973-74 with 1960-61 = 100	Percentage Distribution Derived From	
	1960-61 (Rs.	1973-74 (Rs.)		CPIAL[1]	1973-74 Consumer Expenditure[2]
Rice	0.525	1.64	312.6	55.5	51.74
Wheat	0.455	1.33	292.1	7.5	16.53
Jowar	0.355	1.22	343.5	14.6	12.43
Bajra	0.396	1.12	282.7	3.2	6.05
Maize	0.350	1.18	337.6	4.0	6.05
Barley	0.360	1.22	338.5	4.1	1.60
Small Millets	0.300	0.86	286.3	3.0	1.37
Ragi	0.358	1.10	307.0	4.1	3.19
Gram	0.337	1.63	431.6	4.0	0.74
Composite Index	-	-	-	320.42	312.80

1. Derived from data available on average budget of Agriculture labour households in Rural Area. NSS 11th and 12th round August 1956-August 1957, No.37, Cabinet Secretariat CSO.
2. Derived from the consumption expenditure data, the NSS tables on consumer Expenditure 28th round. No.240, Department of Statistics, New Delhi.
3. Prices derived from the quality and value of consumption of rural households in the expenditure classes of Rs.0 - 15 in 1960-61 and Rs.0 - 43 1973-74 from NSS Reports for 16th and 28th rounds

Source : Tyagi (82)

Table 4 : Index of price received and the consumer price index for agricultural labourers

Period	West Bengal		Gujarat		Punjab	
	Price* received	CPIAL	Price received	CPIAL	Price received	CPIAL
Triennium ending						
1971-72	209	211	205	194	204	209
1981-82	373	393	356	347	383	412

* Price received index is with triennium ending 1961-62 = 100 and against the triennium ending 1981-82 figures are for the triennium ending 1980-81.

Notes

1. Measurement of poverty, trends in rural poverty etc. have been the topic of many studies in seventies. Set for example, Ahluwalia (1977), Rajaraman (1977), Bardhan (1973), Dandekar and Rath (1971), Griffin (1976), and Tyagi (1982).

2. Generally only NSS estimates of consumption expenditure have been used but in a few cases NSS estimates have been adopted in conjunection with CSO estimates. See for example Minhas (1970).

3. In some studies poverty indices that take into account not only the number of persons below poverty line but also its incidence, measured basically as the difference between the level of consumption and the poverty line consumption. For details see Sen (1973).

4. For example see Ahluwalia (1977).

5. A higher order of increase in the input prices than that in output prices may even lead to a decline in income. This point has been further elaborated in the text in the terms of trade section.

6. In a period when terms of trade has moved in favour of agriculture, real incomes may have increased by a rate higher than that indicated by NDP or agricultural growth.

7. The paper is likely to be released shortly.

8. The availability figures are published by the Directorate of Economics and Statistics, Ministry of Agriculture, Govt. of India.

9. Under the Comprehensive Scheme the data is collected by Agricultural Universities/Agro Centres in different States. The analysis of the compiled data is done in Directorate of Economics and Statistics, Department of Agriculture, Govt. of India.

10. See for details Kahlon and Tyagi (1981).

11. The indices of prices received have been constructed taking the triennium ending 61-62 as 100. All important field crops grown in the selected States were considered. Farm harvest prices has been taken as price indicators and weights assigned to each commodity are the shares in the gross value of output in the base year.

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The Effect of Agricultural Production and Prices on the Incidence of Rural Poverty : An Analysis of Inter State Variations*

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* Paper prepared for the seminar on Development and Inter-regional Disparities in India at Giri Institute of Development Studies, Lucknow, March 1983. I am grateful to J. Muraleedharan Nair and Sujana Bai for their help with the computations. I have also benefitted from useful discussions with Rajaram Dasgupta, Chandan Mukherjee, Ashok Nag and K.N. Raj.

The Effect of Agricultural Production and Prices on the Incidence of Rural Poverty: An Analysis of Inter-State variations

The original attempts to find some measure of the abyssmal levels of poverty in British India, undertaken towards the end of the 19th century, were aimed at a critique of the colonial state. 1/ In recent times, however, it is under the auspices of the state itself that attempts to measure the incidence of poverty in post-independence India have been revived. This new research of the sixties and seventies was initiated by the Planning Commission, ostensibly to aid a new kind of planning which would hopefully eradicate atleast the most intense levels of poverty. 2/ No one was surprised that, all the research not withstanding, planning failed to make a dent on poverty; for nobody had really believed that all that stood in the way of eradicating poverty was the preparation of proper estimates of minimum levels of living, target groups of population and the like. The effort however was not entirely wasted for while the ostensible planning goals were not achieved, the research did contribute enormously to the construction of a fairly cautious statistical picture of poverty in India. 3/ Though it was essentially preoccupied with problems of measurement the work of this

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1/ See William Digby - 'Prosperous' British India. London, 1901

2/ See Perspective of Development : 1961-1976. Implications of Planning for a Minimum Level of Living. Perspective Planning Division, Planning Commission, 1962.

3/ Most of the important work of this period has been put together in the volume edited by Bardhan and Srinivasan (1974)

period also prepared the ground for research of the kind reported here which is more concerned with the effect of various economic factors on the incidence of poverty rather than the measurement of poverty itself.

Factors Underlying Rural Poverty:

For our present purpose it is useful to note at the very outset that the rural poor do not form a homogenous category. They are differentiated not only in terms of the intensity of deprivation but also functionally in terms of their roles and positions in the structure of agrarian relations. Accordingly the effect of different factors governing the incidence of poverty may also vary between different segments of the rural poor. Analytically they may be classified into two broad strata, i.e., the class of cultivators who earn their living primarily from the produce of their operated holdings (whether owned or leased in) and the class of agricultural labourers who earn their living primarily by hiring themselves out as wage labourers. For a cultivating household its income would depend not only on the general level of agricultural production but also on the household's command over land — the principal asset in agricultural production — which largely determines the share of its own claim out of total production. To the extent that a portion of the household's share of total produce is also marketed its real income would rise or fall with a rise or fall in the selling price of agricultural commodities relative to the price at which the household may buy inputs or items of consumption from the market. Finally, given a cultivating household's family income the actual level of living or income per capita of the family varies inversely with family size.

In the case of agricultural labourers, the number of persons offering themselves for wage labour may rise directly as a consequence of population growth and declining land: man ratio. The number could also rise, however, as a consequence of changes in the distribution of land which may be quite independent of population growth. This rise in the supply of agricultural labourers might be matched by growing demand. However if the growth of agricultural production is not proportionate, or takes a form which is less labour intensive, such that the increased labour supply is only partially offset by the increased labour demand, then this would adversely effect either the wage rate or the average mandays of employment available per labourer or both. Unionisation of agricultural labour may help to protect the wage rate but not the period of employment per worker. The effect of the above factors on the average income per labourer would be either reinforced or neutralised by changes in agricultural (especially foodgrains) prices, depending on the cash: kind composition of wages and the relationship of money wages to foodgrain prices. Finally, given an average annual real income per labourer, the level of living or per capita income for the agricultural labour household would vary directly with the number of earners per family and inversely with family size.

The factors determining the incidence of rural poverty may thus be classified into three broad groups. First we have factors like the distribution of land which directly effect the income of cultivating households and, second, factors like rural wage rates and wage employment which effect mainly the income of rural labour households. Both these

sets of factors have been set aside in the present analysis. Only the third set of factors such as agricultural prices and production, which effect the incomes of both segments of the rural poor directly, have been taken up for analysis in this paper.

In a sense this is a reexamination of some of the conclusions reached in an earlier exercise where the effects of all the various factors identified above on the incidence of rural poverty were examined in the context of rural Bihar and Punjab - Haryana (Mundle 1982a and 1982b). These two regions were studied as representing polar cases in terms of agricultural performance. The inferences drawn on the basis of these two polar cases are reexamined here using data covering a set of fifteen states. However this re-examination is partial since it is confined to the effects of agricultural production and prices only. The effects of land distribution and trends in agricultural wages, wage employment or other factors related to the income of rural labour households have not been taken up here.

Interpreting the Data

The reference period is 1963-64 to 1973-74 which begins just before the so-called Green Revolution and extends well into that phase. Hence the results reported below reflect the forces that have come into play during this period of agricultural growth. In this context we must distinguish carefully the question of poverty incidence from that of income distribution. In particular it must be noted that inferences drawn regarding the effect of certain economic factors on income

distribution do not necessarily apply to the incidence of poverty as such.

Thus, it is generally believed that agricultural growth has been accompanied by increasing income inequality in the Green Revolution. Even if true it does not follow automatically that the incidence of poverty too should have increased. In principle we can have increasing inequality along with declining incidence of poverty. Similarly it is quite plausable that among cultivating households inequality may increase with rising agricultural prices since the bigger farmers have larger surpluses and are also able to realise better prices - such that their gains are proportionately larger — compared to the peasants. Indeed there is evidence to confirm that this is the case. But it does not follow that the small peasant is worse off in an absolute sense. On the contrary it is concievable that his income too may have increased. Unfortunately even these elementary distinctions are often lost sight of in the relevant literature. It has to be emphasised therefore that the present paper is concerned exclusively with the effect of agricultural prices and production on the incidence of rural poverty and that alone. The question of rural inequality has not been addressed.

Regarding the analysis of data the standard procedure now employed to test hypotheses regarding the incidence of rural poverty is to regress the relevant independent variables on some measure of poverty such as the proportion below a given poverty line or Sen's index of poverty. 4/ This

4/ See for instance Ahluwalia (1978), Griffin and Ghosh (1979), Saith (1981) or the last uncompleted work of the late Dr. Dharan Narain.

was also the method adopted by this author in the earlier exercises on Bihar and Punjab - Haryana cited above. However there is some doubt as to the statistical validity of employing this method when we have no clear a priori expectation as to the form of the functional relationship between our measure of poverty and the independent variables. None of the usual functional forms employed in regression analysis may reflect the real form. It is not clear therefore precisely how the estimated coefficients are to be interpreted.

Analytically our real concern is to test whether the variables in question are positively or inversely related and whether the strength of the relationship is statistically significant. For this purpose the simple correlation coefficient, along with a test of statistical significance, seems to be quite adequate. Accordingly we have tested for the relationships in question using this measure and used the Z - transformation of the correlation coefficient, $Z = \frac{1}{2} \log_e (1+r)/(1-r)$, to test for statistical significance where r is the correlation coefficient and the expression $\sqrt{n-3}\,(Z-0)$ approximately follows the standard normal distribution, n being the number of observations.

The index of poverty used in the analysis is the proportion of population falling below the estimated poverty line corresponding to a daily intake of 2435 calories per capita for each state in each year. A detailed note on the construction of poverty lines is given in the appendix. It is sufficient to point out here that a poverty line is important to our analysis only insofar as it gives us a benchmark at

which to observe whether the population is shifting upwards or downwards on the consumption scale. As such the choice of one or another poverty line is not really crucial to our analysis, unless of course the direction of change itself turns out to be sensitive to the choice of a poverty line. Sensitivity tests applied in the earlier exercises on Bihar and Punjab - Haryana using multiple poverty lines showed that while the actual values of the response elasticities did vary, the sign of the relationship between poverty incidence and the independent variables remained unchanged, and the statistical significance of estimated coefficients were similar, across different poverty lines. These tests have not been repeated in this exercise.

The index used for prices is the state specific foodgrains price index in the ACPI series. A composite weighted producers price index of agricultural commodities whould have been more appropriate but such an inded is not available. The foodgrains price index is therefore the most appropriate index available since foodgrains do account for the bulk of agricultural production in most states. For the same reason foodgrain production has been used as a proxy for agricultural production in the absence of a composite official measure of agricultural production or agricultural incomes at the state level. We have taken foodgrain production per head of rural population to capture the effect of rural population growth on rural per capita real income growth.

The Effect of Agricultural Production

Our earlier reasoning on the factors underlying the incidence of

rural poverty suggests that unless there are sufficiently strong offsetting forces at work an increase in agricultural production would tend to increase real incomes of both poor cultivating households as well as rural labour households. We may therefore expect an overall decline in the incidence of rural poverty with a rise in agricultural production per capita. Table 1 gives the coefficient of correlation between these two variables for each of fifteen states.

Table 1

Coefficient of Correlation between Incidence of Rural Poverty and Per Capita Foodgrain Production

Positive Correlation		Negative Correlation	
Gujarat	0.263	Uttar Pradesh	— 0.824***
Andhra Pradesh	0.226	Tamil Nadu	— 0.815**
Assam	0.215	Bihar	— 0.718**
Rajasthan	0.146	Punjab & Haryana	— 0.609**
Maharashtra	0.093	West Bengal	— 0.528*
		Karnataka	— 0.396*
		Jammu & Kashmir	— 0.337
		Orissa	— 0.337
		Madhya Pradesh	— 0.175
		Kerala	— 0.032

Note: The asteriks indicate statistical significance at 1% (***) 5% (**) and 10% (*) levels respectively.

In six out of the fifteen states there is a statistically significant negative correlation between poverty incidence and agricultural production (per capita foodgrain production being the

proxy variable). In Uttar Pradesh, Tamilnadu, Bihar and Punjab - Haryana the correlation is quite high (significant at 1% or 5% levels) while in West Bengal and Karnataka the correlation is moderate (significant at 10% level). In another four states, i.e., Jammu & Kashmir, Orissa, Madhya Pradesh & Kerala the sign of the correlation coefficient is negative but it is not stastistically significant. As against this we have five states where the sign of the correlation coefficient is positive, i.e., Gujarat, Andhra Pradesh, Assam, Rajasthan, Maharashtra. However the coefficient is not statistically significant in a single one of these cases.

This statistical picture is consistent with the hypothesis that increasing agricultural production tends to reduce the incidence of rural poverty. At any rate there is no evidence that it increases the incidence of rural poverty. At the same time our maintained hypothesis is only tentative since the data does not allow us to test any ceteris paribus propositions which require controlling for the other factors at work. Moreover it must be noted that in as many as nine out of the fifteen states there is no statistically significant correlation between the two variables. This suggests that the production performance of agriculture is not a decisive factor underlying the incidence of rural poverty though improved performance does help to ameliorate poverty. This view is consistent with our earlier more detailed analysis of the Bihar and Punjab - Haryana regions (Mundle 1982a and 1982b). It is also consistent with the results derived by Ahluwalia (1978) using

different methods and a somewhat different set of data. By the same taken it differes from the views of Griffin and Ghosh (1979) and Saith (1981).

It has sometimes been suggested that correlation or regression exercises which basically capture the association between year to year variations in poverty incidence and agricultural production are not appropriate to capture the adverse effects of Green Revolution type agricultural growth on the rural poor since by their very nature these effects only work themselves out over the long run. If true this should show up as a distinct trend increase in rural poverty atleast in a large number of states since these adverse affects of growth would be reinforced by other known adverse long term processes such as the steady decline in land: man ratios.

Table 2

Coefficient of Correlation between Incidence of Rural Poverty and Time

Positive Correlation		Negative Correlation	
Assam	0.795***	Tamilnadu	—0.726*
Rajasthan	0.432	Punjab & Haryana	—0.752***
Orissa	0.328	Karnataka	—0.422
Madhya Pradesh	0.257	Uttar Pradesh	—0.320
		West Bengal	—0.316
		Andhra Pradesh	—0.312
		Gujarat	—0.251
		Jammu & Kashmir	—0.226
		Maharashtra	—0.198
		Kerala	—0.097
		Bihar	—0.038

Note: The asteriks indicate statistical significance at 1% (***) and 10% (*) levels respectively.

Table 2 shows the state wise coefficients of correlation between incidence of rural poverty and the time variable. Barring the exceptional cases of Assam with high positive correlation, Punjab - Haryana with high negative correlation and Tamilnadu with moderate negative correlation, we see no statistically significant correlation between rural poverty incidence and time. Regression enthusiasts can easily verify for themselves using the same data set that except in these three cases the time coefficient is statistically insignificant.

In other words except in the three cases cited there has neither been a trend increase or trend decrease in poverty incidence. These statistics could be interpreted to mean that agricultural growth is simply irrelevant to the incidence of poverty. Alternatively it could also be interpreted to mean that agricultural growth has helped offset the adverse effects of some long term processes which are known to be at work. This view would be consistent with our interpretation of table 1. It would be further reiterated if the NSS survey for 1977-78, which is yet to be released to the public, were to show that there has been a sharp decline in poverty in 1977-78 compared to the early seventies in a number of states.

The Effect of Agricultural Prices

The coefficient of correlation between the incidence of rural poverty and agricultural prices (the proxy variable used being foodgrain prices) is presented here in table 3. We find a positive correlation between poverty incidence and agricultural price in eight out of the fifteen

states. However barring the case of Assam, where the correlation is very high, the correlation coefficients are all statistically insignificant. Similarly we have seven other states where the sign of the correlation coefficient is negative. However except in the case of Punjab-Haryana, where it is moderately high (significant at 10% level) the coefficients are statistically insignificant in all other cases.

Table 3

Coefficient of Correlation between Incidence of Rural Poverty and Foodgrain Prices

Positive Correlation		Negative Correlation	
Assam	0.937***	Tamil Nadu	— 0.655
Rajasthan	0.461	Punjab & Haryana	— 0.593*
Uttar Pradesh	0.416	Karnataka	— 0.293
Jammu & Kashmir	0.397	Andhra Pradesh	— 0.280
Bihar	0.329	Gujarat	— 0.263
Orissa	0.301	Maharashtra	— 0.093
West Bengal	0.110	Kerala	— 0.039
Madhya Pradesh	0.069		

Note: The astriks indicate statistical significance at 1% (***) and 10% (*) respectively. The coefficient for Tamilnadu is insignificant though it is higher than Punjab & Haryana because there are only seven observations for Tamilnadu.

In other words in thirteen out of fifteen states, which between them account for the bulk of India's population and the rural poor, agricultural prices seem to have no significant effect on the incidence of rural poverty. Once again this is consistent with our earlier more

detailed analysis of Bihar and Punjab-Haryana which showed that the observed price-poverty relationship was quite weak. The important question is how do we interpret these results ?

For one thing we see that there is no evidence at the state level, barring Assam, to support the view that an increase in agricultural prices has a general adverse influence on the incidence of rural poverty. At the same time it is difficult to believe that agricultural prices leave the rural poor unaffected. In terms of the a priori reasoning presented earlier it would appear that a rise or fall in agricultural prices has opposite effects on the two major strata of the rural poor which tend to offset each other thus leaving a minimal net effect on the overall incidence of rural poverty. In the case of agricultural labourers the kind component of wages only partially protects them from rising foodgrain prices. To the extent that they buy grain from the market rising prices do erode their incomes and increase the incidence of poverty in this strata. On the other hand a large portion of the rural poor is made up of cultivating households who may be selling grain and also buying it at different points of the agricultural cycle or they may sell other crops and buy grain. The effect of rising agricultural prices on their real income depends therefore on whether they are net buyers or net sellers. The fact that the adverse effect of rising prices on wage-dependent households does not show up as an increase in the incidence of rural poverty su gests that in general these poor cultivating households are net sellers who enjoy real income gains which tend to offset the real income loss suffered by labour households when agricultural prices rise.

Concluding Remarks

The main conclusions emerging out of our analysis of the effect of agricultural production and prices on the incidence of rural poverty in the states may now be briefly summarised as follows:

i) Neither agricultural production nor agricultural prices seem to have a strong or decisive effect on the incidence of rural poverty. Other factors which have not been taken up here, but were examined in some detail in an earlier study of the Bihar & Punjab-Haryana regions, such as land distribution, wage rates and employment would appear to be more important.

ii) Agricultural production is not significantly positively correlated with rural poverty in a single state whereas these variables have significant negative correlation in six out of fifteen states.

iii) A statistically significant trend increase in rural poverty is noted only in Assam as against a significant trend decrease in rural poverty in Punjab-Haryana and also possibly Tamilnadu. It could be argued that the absence of a trend increase in poverty in all other states, inspite of certain known adverse processes at work such as a declining land: man ratio, is attributable to the positive effects of agricultural growth.

iv) There is no evidence, once again except in the case of Assam, of any significant positive correlation between rising agricultural prices and increased incidence of rural poverty.

v) Since wage dependent rural labour households are clearly adversely effected by a rise in foodgrain prices, (iv) suggests that the real income loss of this strata tends to be offset by real income gains of the other major segment of the rural poor, i.e., cultivating households, who are therefore generally likely to be net sellers rather than net buyers of agricultural commodities.

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Appendix: The Construction of Poverty Lines for Individual States: 1963-64 to 1973-74

A1

The problems associated with the measurement of poverty lines and poverty incidence are dealt with briefly as they have been discussed extensively in the relevant literature. In the original official attempt to estimate a poverty line the Planning Commission specified Rs. 20.00 per capita per month at 1960-61 prices as the minimum norm of required expenditure for all India, including rural and urban areas (Planning Commission 1962). Allowing for rural-urban price differentials corresponding to this norm, Bardhan (1974) adopted the all India rural norm of Rs. 15 per head per capita at 1960-61 prices. The same line was also adopted by Dandekar and Rath (1971) as meeting a minimum calorie intake requirement of 2250 calories per head per day. More recently the same norm has been adopted by Ahluwalia (1978) and Nayyar (1977) who made adjustments for inter-state price differentials in order to apply the norm to Bihar state.

However, the difficulty with an all India norm is not only that it fails to take account of inter-state price variations but also that it ignores variations across states in food habits and consumption preferences. Accordingly in some exercises pertaining to individual states such as Kerala (Panikar 1972), Punjab (Rajaraman 1977), etc. the procedure adopted was to find a state-specific least cost diet subject to a set of minimum nutrition constraints and taste preference constraints as a standard linear programming solution. The difficulty with this approach is that a great deal of arbitrariness and personal judgement gets built into the model in the specification of the

taste-preference constraints such that it is not very clear what the solution actually represents.

The preferred procedure, therefore, is to examine consumer expenditure patterns state-wise to identify separately for each state which consumer expenditure level satisfies a given nutritional intake norm. This is possible using the NSS 26th round consumer expenditure survey for 1971-72 which gives state-wise data on the daily calorie and protein intake per consumer unit in each per capita expenditure class separately for rural and urban areas. In the present exercise we have followed this procedure, adopting as the intake norm 2435 calories per head per day. This is the norm recently recommended by the Nutrition Experts group set up by the Planning Commission (Planning Commission 1979). The exact minimum expenditure level was computed by linear interpolation between the average per capita expenditure of the two classes with average per capita calorie intakes just above and below the specified norm.

These poverty lines at 1971-72 prices were then extrapolated to all years covering the period 1963-64 to 1973-74 using the state specific Agricultural Labourers Consumer Price Index (ACPI)*. The time series of poverty lines constructed for each state are given here in table A1. The use of the ACPI as a general deflator for consumer expenditure can lead to serious errors since the prices of different items, accounting

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* This was available only from 1964-65 onwards for Uttar Pradesh and Jammu & Kashmir and 1967-68 onwards for Tamilnadu.

A 3

Table A1

The Estimated Poverty lines for Individual States: 1963-64 to 1973-74

(Rupees)

YEAR	1963-64	1964-65	1965-66	1966-67	1967-68	1968-69	1969-70	1970-71	1971-72	1972-73	1973-74
State											
Andhra Pradesh	22	27	29	33	34	36	37	36	39	44	52
Assam	25	29	32	42	49	46	41	45	47	48	58
Bihar	20	25	30	39	42	32	34	35	35	41	57
Gujarat	25	31	32	36	38	38	40	41	43	53	58
Jammu & Kashmir	—	23	26	31	29	26	28	29	29	35	45
Karnataka	21	28	33	34	38	37	36	38	39	44	56
Kerala	35	43	48	52	55	63	65	69	68	71	89
Madhya Pradesh	14	16	18	23	25	22	24	23	24	28	36
Maharashtra	28	38	40	44	46	44	46	48	52	61	69
Orissa	23	25	28	33	37	38	37	37	39	43	49
Punjab (including Haryana)											
Rajasthan	17	22	23	28	29	30	32	29	29	38	47
Tamilnadu	—	—	—	—	40	42	45	41	41	45	57
Uttar Pradesh	—	26	26	33	37	28	31	29	30	37	47
West Bengal	31	32	40	46	56	47	46	48	49	51	64

Sources: (i) The National Sample Survey, 26th round, July 1971 - June 1972

(ii) Agricultural Labourers Consumer Price Index from various issues of Agricultural Prices in India.

for different proportions of the consumption basket at different levels of consumer expenditure, have changed at different rates. However it will be evident that the problem arises mainly in the context of measuring changes in inequality of consumption expenditure over time. The ACPI is probably not a bad deflator for computing the current money value in different years of a fixed basket of 'poverty line' consumption.

The time series of poverty line consumption expenditure constructed for each state was then applied to the NSS state-wise rural tables of household distribution by consumer expenditure classes in order to estimate the percentage of rural population below the poverty line for all years in the period 1963-64 to 1973-74. The precise percentages were computed by linear interpolation within the expenditure class enclosing the poverty line on the assumption of even distribution of the population within the expenditure class. The proportions so computed were taken as measures of the incidence of rural poverty over time for correlating variations in poverty incidence with variations in per capita foodgrain production and foodgrain prices in each state.

One difficulty with this 'head count' measure of poverty incidence is that it counts the proportion of population below a poverty line without taking any account of the distribution of that population below poverty line expenditure. Sen's Index (Sen 1973) does take account of this aspect and has been used by Bhatty (1974), Ahluwalia (1978) and others in India. However it is an extremely complex index, not easily amenable to intuitive interpretation, especially when applied to grouped data. A less elegant but intuitively more appealing approach

is to employ the conventional head count method but use multiple poverty lines to see whether the over time pattern is sensitive to the choice of a particular poverty line.

The use of multiple poverty lines also takes care of a second problem, namely, the specification of an appropriate minimum calorie intake norm. The current debate on this question among statisticians and nutrition experts in India suggests that the problem is almost intractable because there appear to be variations in calorie requirements not only between different persons but also for the same person on different days, and this is quite apart from the effect of variations in the nature of work or the environment. The problem can be circumvented by adopting multiple poverty lines, corresponding to different calorie intake norms, and checking to see whether the patterns of poverty incidence are sensitive to the choice of a particular line.

In the present exercise such sensitivity tests have not been applied. However in an earlier exercise dealing with Bihar and Punjab (including Haryana), in some sense polar cases with regard to agricultural performance, the sensitivity tests using multiple poverty lines were applied (Mundle 1982a and 1982b). It turned out that the numerical value of the response elasticities of poverty incidence with respect to agricultural production and prices were different at different poverty lines. However the broad qualitative relationship between these variables, or the lack of it, was invariant with respect to the choice of a particulat poverty line.

Growth, Employment, and Wages in Agriculture

by

Sheela Bhalla

Introduction

The emphasis in this paper, as in the title, is on employment, and more specifically, on the changes in the share of agricultural workers[1] in the Indian workforce from 1961 to 1981. It will be argued that, on the employment front, the most exciting thing that has happened in India in the past 50 years, is the 3.9 percent fall in the share of male agricultural workers[1] in total male workers, recorded by the 1981 Census. Table 1 gives a bird's eye view of the shifts over the past two decades, according to the 1981 Census[2]. Table 2 gives similar figures at the state level.

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1. Cultivators plus agricultural labourers equals agricultural workers.
2. Census of India 1981, Series 1, India, Paper 3 of 1981. Provisional Population Totals, workers and Non- Workers.

Table: 1

Share of Male Cultivators, Agricultural Labourers, and Male Agricultural Workers in All Male Workers : India - 1961, 1971, 1981.

Year	Male Cultivators		Male Agricultural Labourers		Male Agricultural Workers	
	Share	Change in Share	Share	Change in share	Share	Change in share
1961	50.97	*	13.73	*	64.70	*
1971	45.73	-5.24	21.71	+7.98	67.44	+2.74
1981	43.77	-1.96	19.77	-1.94	63.54	-3.90

Source: Census of India 1981, Series-1 India Paper 3 of 1981, Provisional Population totals, Workers and non-workers. Table 2 and 3.

Now 3.9 percent does not look like a very big shift in percentage terms, but in India it represents an awful lot of people- roughly 6,800,000 male workers. More important, for the sake of the people who remain in agriculture, and for the economy as a whole, this shift, which at long last brings the direction of the trend in the employment structure into line with that of the output structures, may have many positive implications.

Before getting into the details, it may be well to have an overview of the long term output and employment structure trends.

Table: 2 Variation in the Shares of Male Cultivators Agricultural Labourers and Other Workers 1961-71 and 1971-81.

Sl. No.	India and Larger States	Male Cultivators		Male Agricultural Labourers		Other Male Workers	
		1961-71	1971-81	1961-71	1971-81	1961-71	1971-81
INDIA		-5.24	-1.96	+7.98	-1.94	-2.74	+3.90
1.	Andhra Pradesh	-3.84	-0.67	+6.01	-1.12	-2.17	+1.79
2.	Bihar	-5.90	-0.60	+13.42	-2.64	-7.52	+3.24
3.	Gujarat	-4.67	-5.52	+5.69	-0.06	-1.02	+5.58
4.	Haryana	-8.62	-5.03	+8.40	+0.11	+0.22	+4.92
5.	Karnataka	-9.20	-1.10	+8.52	-2.19	+0.68	+3.29
6.	Kerala	-1.10	-6.00	+12.00	-1.72	-10.90	+7.72
7.	Madhya Pradesh	-2.74	-2.70	+5.33	-1.61	-2.59	+4.31
8.	Maharashtra	-4.51	-2.59	+3.39	-2.95	+1.12	+5.54
9.	Orrissa	-7.07	-1.33	+10.22	-2.74	-3.15	+4.07
10.	Punjab	-2.90	-5.58	+10.27	+2.32	-7.37	+3.26
11.	Rajasthan	-3.40	-3.67	+3.88	-1.71	-0.48	+5.38
12.	Tamil Nadu	-7.36	-2.53	+9.85	-0.99	-2.49	+3.52
13.	Uttar Pradesh	-4.50	+0.16	+8.12	-2.76	-3.60	+2.60
14.	West Bengal	-5.18	-1.19	+10.59	-1.68	-5.41	+2.87

Source: Statement5, page 25, Census of India 1981, Series 1, India Paper-3 of 1981, Provisional Population Totals, Workers and non-workers.

Table: 3 Structure of India's Gross Domestic Product
(at constant 1970-71 prices):
(Share of Sectors in GDP :- %)

Sl.No.	Sector	1950-51	1955-56	1960-61	1964-65 *	1968-69	1973-74	1978-79
1.	Agriculture and Allied sectors	58.9	57.3	54.2	49.9	46.3	45.2	41.6
2.	Mining, Manufacturing and construction	14.9	15.9	17.7	20.0	21.2	21.6	22.5
3.	Electricity, gas, water supply, transport, storage and communication	3.9	4.2	4.9	5.4	6.4	6.8	7.4
4.	Services	22.3	22.6	23.2	24.5	26.1	26.4	28.5

* Since agricultural output was reduced in 1965-66 by severe drought, 1964-65 figures give a more correct picture of trends.

Source: p. 13 GOI Sixth Five Year Plan 1980-85

In India, from the 1950's onwards, the share of agricultute in national output fell consistently, and the shares of manufaturing and services rose. (see table 3). However, the employment structure response logged for behind- about 25 years behind, it now appears. Instead of falling, the share of agriculture in the workforce actually increased between 1961 and 1971. Thus there was retrogression in the Indian occupational structure, at least up until somewhere in the mid-70's . But if the figures in tables 1 and 2 are to be believed, then Indian finally turned the corner some time during the 1970's.

At this point, it may be noted that what is surprising about the trend in the work force structure is not that it was contrary to that of output for so many years[1] , but rather that it is now, apparently, moving in the same direction, after a final,(one hopes), kick in the opposite direction during the decade ending 1971. Data published annually[2] for large members of low and middle income countries indicates two things: first, that normally the occupational shift out of agriculture follows the improvement in output structure with a considerable

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1. At one stage, the Planning Commission apparently expected the two to move together.(see second five year Plan) For a more recent version, see V.K.R.V.Rao, "Changing Structure of the Indian Economy". EPW 15 Dec 1979.

2. see: World Development Reports of the World Bank. These include an appendix giving data on sectoral shares in output, and in employment for each country,ranked by per capita income.

time lag, and secondly, that typically the work force structure begins to change at considerably higher per capita income levels than these so far achieved in India. In short what needs to be explained in India is the recent proportionate shift out of agriculture, and not the earlier accumulation of workers in this, the traditional 'ultimate dump' for surplus labour in the Indian economy.

Although this goes far beyond the scope of the analysis undertaken in this paper, one can speculate that, like the high rate of savings observed during the 1970's, despite low per capita incomes, the occupational shift may be in part, the end product of unequal income distribution. The income elasticity of demand for manufactured goods and for services is for people in the middle income and highest highest income groups respectively.[1] Given a significant subset of the population moving upwards within these two income categories. The derived demand for labour in secondary and tertiary sector occupations, may have risen considerably during the 1970's, even though the vast majority of the population continued to eke out an existence at or below the poverty line. In rural areas specifically the distribution of the gains from the new technology may be operating to produce such effects, and in the same regions, a fall in the elasticity of agricultural output may be associated with the increasing use of modern

1. For an outline of the links between the pace of shifts in sectoral output shares, and per capita income levels, see Nicholas Kaldor, Strategic Factors in Economic Development, Cornell University Press 1967.

inputs in the technology package.

However, such speculations about factors which may be behind the shifts recorded by the 1981 Census are logically premature. The first thing to be established is, can the Census results be relied upon? Can worker rates[1] be compared overtime, and firm conclusions be derived about occupational shifts? If the shifts are real, and not merely the product of changing Census concepts and methodology, as has been argued by some scholars, how does the change affect the magnitudes of other commonly used economic indicators, such as man land ratios, and sectoral output per worker? Finally, do such shifts, if indeed they have taken place, constitute a healthy development, or are they merely symptomatic of an overall deterioration in the employment situation, in the Distribution of land, and in the general economic condition of the majority of thepopulation?

The sceptics, on various counts, include: J.N.Sinha[2] on the the substantive question of the very existence of the shifts; virtually everybody, including the Census authorities themselves[3]

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1. "Crude Work Force Participation Rates", "CWR" for short in the literature, are defined as the number of workers as a percentage of the total population, irrespective of age.

2. J.N. SINHA " 1981 Census Economic Data- A Note" . EPW 6 Feb. 1962

3. See: Census of India 1971, Series-1 India miscellaneous studies, Paper 1 of 1974, Report on Resurvey on Economic Questions - some results.

on the inter-censal comparability of worker rates; and a host of others[1] on what turned out, in many cases, to be relatively more minor points, at least from the point of view of the present enquiry. On the implications of these shifts, assuming for the moment that they actually occurred, Amitabh Kundu, among others[2], presents evidence to suggest that the migrants out of agriculture may not be much better off in their new non-agricultural jobs in urban centres. Many view the 1961 to 1971 shifts in particular, as the pure product of 'push' factors, and argue that the condition of the majority of those who are left behind in agriculture is worsening. Finally, if employment opportunities in general are failing to keep up with population growth, it is possible that virtually everybody directly concerned, is worse off, regardless of the direction of the proportionate occupational shifts.

It is to these, logically prior questions that we now turn. Data on agricultural growth, wages, and related variables will be brought into the picture only to give a perspective on whatever is in fact happening to the work force.

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1. Among the most informative are:
   - i J.Krishnamurty. Changes in the Indian Workforce in the recent period mimeo. Paper presented to the conferenc on Recent Population Trends in South Asia, New Delhi February 1983.
   - ii J.Krishnamurty Unemployment in India: The Bread Magnitudes mimeo, paper presented at the Annual Conferenceof the Indian Association for the Study of Population. New Delhi December 1982
   - iii Pravia Visaria and Leela Visaria "Indian Population Scene after 1981 Census: A Perspective" EPW Special Number Nov. 1981
   - iv K.S.Natarajan and K.K.Unni "Under-Enumeration in Indian Census " EPW 28 February 1983
2. Amitabh Kundu and Moonis Raza, Indian Economy: The Regional Dimension Spectrum Publishers, New Delhi 1982.

Inter-Censal, Inter-NSS Round, and Census-NSS Comparability

The main purpose of this section is to establish whether or not comparable data can be assembled for 1961, 1971, and 1981, from Census documents, and for 1972-73 and 1977-78 from the reports of the National Sample Survey 27th and 32nd Rounds. The broad conclusion is: yes, it can be done. Furthermore, the appropriate data can be used to determine the direction of the changes in the level, and sactoral structure of employment overtime.

These conclusions, it should be emphasized, are the product of near total reliance on conceptual and numerical work done, and juggements, formed, by others. The only conclusions reached on the basis of excersisesdone by the present autheor, relate to the comparability of the Census 1971 and the 1971-72 Census Resurvey, sub-sample S_1 data. In addition, in certain cases where the experts appear to disagree on important substantive issues[1], an attempt is made to reconcile their seemingly contending views, on the basis of any examination of the conceptual frameworks adopted by each.

In the second part of this section, the tabular results of the compilation of comparable data from Census of India publications are presented and discussed, and their

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1. see for example the apparently conflicting views of J.Krishnamurty (1983) and J.N.Sinha (1982), on two issues : whether or not the rate of growth of employment exceeds the rate of growth of population from 1971 to 1981. and (2) whether the shift out of agriculture is real, or merely a by-product of conceptual changes.

impact on some of the magnitudes in common use in economic analysis are considered. (Unfortunately there was not time to do a similar excercise on NSS data)

Finally the appropriateness of alternative measures of the work-force, to particular analytical purpose is considered.

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The crux of the inter-censal, inter-NSS survey, and Census-NSS comparability problems, lies in the distinctions made between three conceptual categories : main workers, secondary or marginal workers, and non-workers. From Census to Census, and from survey to survey, The dividing lines are drawn at different points in the contimum which ranges from the regular full-time worker to the non-worker who has not done even a single day's work in the entire year. In short the doubts expressed about the conceptional comparability of Census and NSS data over time, and Inter se , are prefectly well founded. Concepts and methodology have so varied in the data collection programmes, undertaken by both these organizations, that great care has to excercised in choosing suitable magnitudes which are comparable, and identifying those which are not.

The test for comparability usually applied by demographers is expressed in terms of "participation rates" or "worker rates", for short, "Crude Work Force Participation Rates" is the longer term preferred by demographers, but they

commonly abbreviate this to "CWR". The Crude Work Force Participation Rate is simply the number of workers as a percentage of the population, irrespective of age. On the criterion of the consistency of CWR's, there seems to be wide agreement that, for example, the 1961, 1971, and 1981 Census data can be made conceptually comparable by either counting main workers only, or by counting both main and marginal workers.

However, the regular census document which give figure on the bases of the concepts actually applied in the 1961, 1971 and 1981 census do not permit the assembly of time series data on either of these two bases: namely (i) main workers only, or (ii) main plus marginal workers. If you want comparable data across censuses, you have to resort to a document known as the Resurvey on Economic Questions.[1] There, figures are given which translate the 1961 census data to the "main workers" bases actually used in the 1971 census. These comparable 1961 estimates are known as "adjusted 1961" figures. Similarly, "adjusted 1971" figures are given which are conceptually comparable to the original 1961 Census data.

Aside from the distinction between main and marginal workers, which gives the greatest trouble, there are other relatively minor, but more intractible problems. For example, the 1971-72 Census Resurvey was not conducted on the same dates as the original 1971 Census, but at what appears

1. For full title, see footnote 3 on page 7.

to have been a "busier" season in some states in terms of work force participation. The 1981 Census also may have been held at a slightly busier season than the 1971 Census in some states. Then there is the problem of question sequence, and the choice of responses offered to respondents[1]. These differences tend to affect the dividing line between marginal workers and non-workers, which is commonly ill-defined in any case, including the cases of both "adjusted 1971" and unadjusted 1961 figures. Finally there are temporary difficulties with the 1981 Census at a greator degree of disaggregation. Buried in the published data is a small[2] subset of workers, "unspecified" as to occupation. The lack of knowledge about the size of this small group, which has been merged with "other workers" in the documents published so far, raised doubts about the exactness of the reported number of agricultural labourers.

In short, the existence of a set of people whom the salaried urban layman would intentively identify as part-time or marginal workers create the biggest problems. One gains the impression from some of the literature that there may be some hope of an early settlement of the boundary question as between main workers and marginal workers. At least both the census and NSS authorities appear to be narrowing their areas of disagreement. However, in the case of the

1. These are described under "comment" in scheme 1.
2. Probably less than 2 percent, as in the 1971 census.

demarcultion line between marginal workers and non-workers, the concerned parties appear to be no nearer a solution in 1981 than they were in 1961.

The direction of the conceptual difference in terms of the work force participation rates they generate is outlined for NSS surveys and Censuses from 1961 to 1981, together with comments, in schema 1 below, The broad conclusions which emerge are: first stick to male main workers if you can, and male plus female main workers if (for purposes of your analysis) you cannot do without the women, secondly if you feel you Must use concepts which include marginal workers, have a good look at the divergence of the relevant CWR's before you proceed. The divergencies in the CWR's may well exceed the likely magnitudes of the variations, growth rates, or changes which it is sought to estimate. If this is the case, the proposed analysis is torpedoed and sunk even before it has been launched. Finally, compare males only if Census-NSS comparisons are involved, and don't use NSS 32nd Round figures without adjusting for the low population estimate.

Reference has been made to the "busy season effect", in relation to "adjusted 1961 and 1971 figures derived from the 1971-72 Gensus sample Resurvey. The problems arises because the original 1971 census was conducted between 10 March and 1 April 1971. The Resurvey was undertaken over periods of varying duration within the range 10 Dec 1971 to 31 July 1982, depending on the state. The results of the

Schema 1 : Inter Censul, Inter-NSS, and Census-Nss Comparability, and Adjustments

Comparison/Direction ofDifferences	Adjustments and Comments
A. Inter-Censul Comparisons 1961 "worker" concept which includes main workers plus some marginal workers > 1971 "main activity worker"concept ≃ 1981 "main activity worker" concept.	Two solutions are ossible: Either get rid of the marginal workers of 1961, and compare "adjusted 1961"figures with the main workers figures of 1971 and 1981; or take the 1961 figures as they stand, use 1971 figures "adjusted to the 1961"worker" concept and compare these with 1981 main plus marginal workers. For males. it doesn't much matter which procedure is adopted, or indeed, whether adjusted figures are used at all. If your analytical purpose is well served by "males only" figure, ignore the females. For females: use adjusted figures for 1961 and stick to main workers. "Adjusted figures for 1971 in the case of females, suffer from a "busy season effect", but they are a considerable improvement over unadjusted ones.
B. NSS 27th and 32nd Round Comparisons 1972-73 "usual status workers", which includes many "usual status secondary activity workers"(as defined in NSS 1977-78) > 1977-78 "usual status main workers.	Solution : Club together the main and marginal workers of the NSS 32nd Round, and compare the result with NSS 27th Round figures. The CWR "match" is very good for rural males, urban males, and rural females; and reasonably good for urban females at the all-India level. At the state level, the males data is reasonably comparable, but that for females is not. Complication: The 32nd Round published results are based on projections of population when the 1981 Census proved to be much too low. Corrected figures are not yet available.

C. Census - NSS Comparability

1. NSS 27th Round "usual status worker" concept > 1971 census "main worker" concept, due to NSS failure to specify any minimum period of work to qualify as a worker.

2. NSS 32nd Round "usual status main worker" concept > 1981 census "main workers due to NSS "3 choice" procedure versus census "2 choice"

3. NSS 32nd Round "usual status secondary activity worker" concept < 1981 census "marginal workers" concept, due to NSS falure to specify any minimum period of work is qualify as a worker.

1. Census 1971-NSS 1972-73 comparisons- all India.

For males: if you club together main and marginal workers, the CWRs are very close. If you don't, it doesn't make much difference.

For females: The 1971 Census CWRs, even with 'clubbing' are much below those of the NSS , "Adjusted 1971" census figures improve matters, but the NSS estimates remain for above Census figures. Avoid the use of females data or persons (males plus females) data if at all possible.

2. Census 1981-NSS 32nd Round comparisons- all India

For males: The differences between CWRs, on a main worker versus a main plus marginal workers, and as between census and NSS estimates is in all cases small around 2 percent.

For females: with or without clubbing NSS and Census estimates fail to tally even approximately. NSS concepts generate higher CWRs than the census.

3. At the state level the males figures remain reasonably comparable. The females figures become much worse.

4. As a practical matter, work with males figures only. Conceptually however census 1981 and NSS 1977-78 are not equivalent reason: 1981 census asked respondents to choose between two activities - work and non-work, while 1977-78 NSS asks him to choose between 3 activities: employment, unemployment, and outside the labour force. The result is thatthe NSS main workers category is conceptually larger than the census, while the census 1981 marginal workers category is conceptually larger than NSS secondary workers.

5. Complication: As in B above.

Resurvey subsample 1, which used the same concepts and procedures as in the original 1971 Census, are given in table 4 for 15 states, together with the period of the resurveys, and the differences in the Crude Worker Rates which emerged. In principle, in each state, the two CWR's should be identical but for the "busy season effect", and sampling errors.

The conclusions about the 1971 census and 1971-72 Resurvey sample S_1, are summarized below in point form.

1. For total males there is no evidence of a busy season effect. In 7 out of 15 states the resurvey sample figures are higher, but in 8 out of 15 cases they are lower. The positive and negative differences are in all cases very small.

2. For females, in 12 out of the 15 states listed the resurvey sample figures are higher. Only in Haryana, U.P., and West Bengal are they lower. In the 12 states where the CWR's for females are higher, the positive difference is commonly, substantial. In the three 'negative difference states, the differences are very small, and furthermore they relate to states where the CWR's for females are in any case much below the CWR's for the 'typical' state. Moreover, in at least two of these states (Haryana and U.P.), there is reason to think that the 1971-72 resurvey was done at a less busy season than was the original 1971 Census.

3. In 6 of the 7 states for which the male resurvey figures are higher than the 1971 census, the female CWR's are also higher In two of the 8 states for which male CWR's are lower in the resurvey, the female CWR's also fall.

Table 1 Changes in CWR, Census 1971 to Resurvey 1971-72 Sub-sample 1, Males and Females, Total, Rural, and Urban, with Period of Resurvey, by State.

State	Male Participation Rates: Total (Rural plus urban)		Difference: 1971-72 Less 1971 (+, -, or =)			Period of Resurvey 1971-72	Female participation Rates Total (Rural plus urban)		Difference: 1971-72 less 1971 (+, -, =)		
	1971 Census	1971-72 Resurveys$_i$	Total	Rural	Urban		Census 1971	1971-72 Resurveys$_i$	Total	Rural	Urban
1. Andhra Pradesh	58.21	58.83	+	+	-	15Jan-15Feb	24.16	29.07	+	+	-
2. Bihar	52.16	54.56	+	+	+	10Dec-29Dec	8.88	14.65	+	+	+
3. Gujarat	51.24	51.92	+	-	+	14Dec-15Jan	10.26	13.28	+	+	+
4. Harvana	47.27	45.35	-	-	-	13Dec-15Jan	2.41	1.56	-	-	=
5. Himachal Pradesh	52.43	49.59	-	-	-	1April-3June	20.79	28.87	+	+	+
6. Karnataka (Mysore)	54.40	54.90	+	+	+	15Dec-1Jan	14.20	15.67	+	+	+
7. Kerala	45.00	44.30	-	+	-	3Jan-25Jan	13.49	17.70	+	+	+
8. MadhyaPradesh	53.73	53.64	-	-	-	21Jan-31Mar	18.65	19.88	+	+	-
9. Maharashtra	52.08	50.78	-	-	-	23Jan-12April	[illegible]	[illegible]	+	+	+
10. Orrissa	55.32	53.91	-	-	-	12Jan-26Feb	6.81	11.65	+	+	+
11. Punjab	52.82	52.68	-	-	-	1Feb-26Feb	1.18	1.32	+	+	+
12. Rajasthan	52.09	53.28	+	+	-	11Jan-27Feb	8.34	10.13	+	+	-
13. Tamil Nadu	56.01	56.60	+	-	+	8Mar-26April	15.19	28.52	+	+	+
14. Uttar Pradesh	52.24	52.09	-	-	-	21Jan-20Feb	6.71	5.63	-	-	-
15. W.Bengal	48.83	49.15	+	+	+	1April-31July	4.43	3.16	-	-	-
INDIA	52.50	52.80	+	+	+		11.85	15.30	+	+	+

Source: Tables 1 and 2, pp 11 & 12. Census of India 1971 Series 1 - India, Miscellaneous Studies paper 1 of 1974. "Report on Resurvey on Economic Questions- Some Results".

Significantly, these two are Haryana and U.P., where the resurvey covered a slack period, rather than a busy season. In the six other cases where male CWR's in the resurvey are marginally lower, female CWR's rise.

4. It can be condluded that there is evidence of a strong 'busy season' effect on female CWR's in the resurvey, and virtually no impact on male rates. For males, therefore, it does not matter which set of figures is used, However, for females, it can be assumed that resurvey CWR's, and the estimates of female main workers based upon them, will be biassed upwards by the busyseason effect in 12 out of 15 states, and possibly biassed downwards in two states.

5. Given the Census procedure used to generate "adjusted" 1961 and 1971 magnitudes, (1961 adjusted so as to be conceptually comparable to 1971 census figures, or 1971 adjusted so as to be comparable to the 1961 census figures), the results will be, for males: that there is no significant advantage in adopting 'adjusted' figures. For females, the adjusted figures for 1961 which should be lower than the original ones, may even turn out to be higher instead, because of the 'busy season' effect, while the adjusted 1971 magnitudes, which should be larger than the original 1971 figures, may be smaller instead.

The figures in table 5, however, indicate that the entire excercise was worthdoing, not with standing the upward bias imported by the "busy season effect".

Table :5

Crude Worker Participation Rates, 1961 Census, and "Adjusted 1961", Total (Rural plus urban), males and females, for 15 States and India.

State	Main workers Male Census 1961	"Adjusted 1961	Difference +or -	Main workers Female Census 1961	"Adjusted 1961	Difference + or -
1. Andhra Pradesh	62.22	62.34	+	41.32	36.17	-
2. Bihar	55.60	56.94	+	27.12	22.87	-
3. Gujarat	53.47	53.34	-	27.89	20.93	-
4. Haryana	52.17	51.54	-	21.51	16.27	-
5. HimachalPradesh	59.32	56.91	-	48.12	30.22	-
6. Karnataka (Mysore)	58.38	56.97	-	32.02	26.93	-
7. Kerala	47.20	45.95	-	19.71	17.26	-
8. MadhyaPradesh	60.21	59.85	-	43.99	39.72	-
9. Maharashtra	57.09	57.11	+	32.10	35.39	+
10. Orissa	60.75	61.29	+	26.58	20.24	-
11. Punjab	53.01	54.26	+	5.50	4.41	-
12. Rajasthan	58.14	56.81	-	35.89	26.81	-
13. Tamil Nadu	59.74	59.22	-	31.28	27.93	-
14. Uttar Pradesh	58.19	52.71	-	18.14	10.26	-
15. W.Bengal	53.98	53.69	-	9,43	9.95	+
INDIA	57.12	55.94	-	27.96	22.85	-

Source: Table 5, p 18 and 19, Report on Resurvey op.cit.

What is found is that, for females, despite the busy season effect, the adjusted 1961 CWR's are below the 1961 Census figures in all but two states, as they should be, given the change in concepts used between 1961 and 1971, had the busy season effect not been at work, the adjusted female participation rates in 1961 would have been even lower. This leads to two conclusions. First, the changes in the definition of workers between the 1961 and 1971 Censuses made a substantial difference to the number of females reporting themselves as workers. This difference is even greater than the one suggested by the "revised 1961" figures. Secondly, not withstanding the 'busy season effect', the "adjusted 1961" figures are much to be preferred to the original 1961 Census figures, if analysis based on the 1971 and 1981 concepts is to be done.

For males, in most states, very few people were affected by the change in concepts of worker status. The 'busy season effect' was also negligible. However, the change in concepts does seem to have made a perceptible difference in at least one state-Uttar Pradesh. For males, on balance, the 'adjusted 1961' figures may be preferred, despite the rise in CWR's in 5 states.

In view of all that has been said, the tables which follow have been compilled on a main workers hases. The data is conceptually comparable, as "adjusted 1961" figures have been used. In tables 6a,6b, and 6c, conceptually comparable Census data on worker rates is presented fer main workers-persons, males, and females, respectively. Table 7 gives comparable data for inter-censal changesi in the occupational structure of the work-force.

Aside from formal conceptual comparability however, other issues affecting comparability have been raised. The most important ones from the point of view of the analysis of inter-censal trends relate to under-enumeration, and to the "busy season effect". -censal differences in the extent of inter-
The inter-enumeration are too small to affect conclusions about the direction of changes in relation to workers. The under-counts of total population in 1961, 1971, and 1981 respectively, are: 0.7percent, 1.7 percent, and 1.8 percent[1]. That is, the undercount, in for example, the 1981 Census, is 0.1 percent more than it was in 1971, Most of this under count relates to little children. Thus in the CWR tables, it affects total population which is the demominator in the CWR calculation, but his very little impact on the numerator, which is 'workers'. The only significant source of trouble in comparing the figures overtime arises from from the busy season effect on female workers. The 1961 CWR's

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1. On under-enumeration see: K.S.Natarajan and K.K.Unni. "Under-enumeration in Indian Censuses" EPW 26 Feb 1983. In J.N.Sinha (1982) op cit , the allegation that in 1981, under reporting could alter conclusions was based on an analysis of long-term trends in the work force, and comparison with NSS data, and not on the census estimates of under-enumeration which become available later.

for females are too high in relation to those for 1971 and 1981 - about 3.5 points too high at the all India level[1]. This factor will be taken into account in interpreting the data.

x x x

On reading J.N.Sinha[2], the layman is likely to conclude that, (i) there has been a distinct improvement in India's employment situation, but that (ii) the share of agricultural workers has remained the same over the decade ending 1981. If he reads J.Krishnamurty[3] instead he will reach quite contrary conclusions, namely, (i) that there is a definite deterioration on the employment front, and, (ii) that according to both Census and NSS, the share of agriculturalworkers has fallen. Faced with these apparently irreconcilable judgements of the experts, the layman may be forgiven if he abandons the attempt to understand what is actually going on. Yet these apparently confliting assessments can be reconciled quite readily.

Let us begin with the seemingly divergent views on exployment.

J.N.Sinha and J.Krishnamurty are both right, each in his own way, as might be expected from experts. The former includes the ladies, and derives his conclusions from total workers figures. The latter works with 'males only' data, which is in

1. For an assesment of the impact of the "busy season effect" at the state level, refer to table 4.
2. J.N. Sinha (1982) op cit.
3. J.Krishnamurty (1983) op cit.

principle a preferred practice, provided that males only data is appropriate to the analytical purpose. A second data base difference between the two scholars is that Sinha's CWR s are based on combined main and secondary workers, while Krishnamurty adopts the main workers only approach. However, even if you stick to main workers, the Sinha conclusion imerges from the "persons"(males plus females) data, and the Krishnamurty result from males only data. See columns 8 and 9 in tables 6a and 6b respectively, at the all India level.

For "persons", the all India CWR's rose over the decade, from 33.09 to 33.44. On a main workers bases, therefore, the improvement is marginal. When marginal workers are also taken into account, the improvement is significant:- from 33 percent in 1971 to 37.5 percent in 1981, according to J.N.Sinha's calculations[1]. This implies that the workforce increased at a faster rate than the growth of population. However, for main workers, male only, the CWRs fell from 52.61 to 51.23. (In terms of male main plus marginal workers, however, there was an improvement from 52.7 to 53.2)

This leads to two kinds of questions, First, which is the better measure of employment trends? And second, does the fall in the male CWRs (main workers Basis), and the rise in the corresponding CWR's for females, necessarily imply a worsening of the job situation for men, and an improvement in the case of women? An attempt to answer these questions is made below.

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1. J.N.Sinha (1982) op cit p 195.

In the case of imployment estimates, what we want to know, surely, is whether the economy is providing jobs at a rate less than, equal to, or more than the population growth rate. As long as the notion of 'jobs' is not specified as to sex, the data appropriate for the purpose relates to "persons", not to males alone. Since, during the decade 1971 to 1981, the expansion of jobs opportunities more than kept pace with the population, regardless of whether or not marginal workers are counted, the Sinha conclusion is the "correct" one. Provided that the "jobs for persons" criterion is accepted, the Sinha finding is based on a better measure of employment. If however, the focus of analytical interest happens to be on males, Krishnamurty's conclusion holds for male main workers. Their participation rates have been declining from 56 percent in 1961, to 53 percent in 1971, and to 51 percent in 1981. But if you add in marginal workers the situation is not one of deterioration. The CWRs for males, for main plus marginal workers has improved from 52.7 to 53.2. If it is accepted that 'marginal' jobs are worth less than 'main' jobs, then on balance, the conclusion is that the job prospects for men have worsened over time.

For females, the situation has unambiguously improved. On the preferred "main workers" bases, their CWRs have improved perceptibly, from 12,13 in 1971 to 14,44 in 1981. The change is even more marked for female 'main plus marginal' workers combined, with a 1971 figure of 14,2 and a 1981 figure of 20.8 .

Table 6 a :- Crude Worker Rates, Persons(male plus females), Main Workers only, 1961, 1971, 1981, : Rural, Urban, and Rural plus Urban, for 15 States.

State	Persons-Rural			Persons - Urban			Persons- Rural plus Urban		
	1961 Adjusted[1]	1971	1981	1961 Adjusted[1]	1971	1981	1961 Adjusted[1]	1971	1981
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. Andhra Pradesh	52.44	43.94	45.76	34.86	30.73	30.36	49.38	41.39	42.18
2. Bihar	40.35	31.34	30.23	35.71	28.30	25.65	39.96	31.03	29.66
3. Gujarat	40.71	32.96	34.18	28.75	27.57	28.46	37.63	31.45	32.40
4. Haryana	36.66	26.47	27.59	27.86	26.31	29.07	35.15	26.44	27.92
5. Himachal Pradesh	44.35	37.16	33.90	38.74	34.20	33.83	44.00	36.95	33.80
6. Karnataka(Mysore)	44.91	36.39	39.63	33.08	29.60	29.90	42.26	34.74	36.82
7. Kerala	32.06	29.53	26.95	28.05	26.99	24.80	31.46	29.12	26.54
8. Madhya Pradesh	52.78	38.10	40.94	33.54	28.09	28.74	50.03	36.72	38.89
9. Maharashtra	50.63	38,60	42.66	36.37	31.80	31.39	46.60	36.48	38.71
10. Orissa	41.03	31.29	33.19	36.68	30.44	30.11	40.76	31.22	32.82
11. Punjab	31.64	29.11	28.89	30.16	28.10	29.42	31.30	28.87	29.09
12. Rajasthan	45.15	32.39	31.43	29.05	25.84	26.26	42.53	31.24	30.35
13. Tamil Nadu	47.58	38.19	43.04	32.81	30.23	31.25	43.64	35.78	39.15
14. Uttar Pradesh	33.47	31.48	29.57	25.90	27.67	27.15	32.50	30.94	29.13
15. West Bengal	32.87	27.19	28.31	30.12	30.12	28.89	33.24	27.91	28.47
All India Excluding Assam, and Jammu & Kashmir[1]	41.64	34.04	34.77	36.03	29.34	29.17	39.85	33.09	33.44

1. All India includes unadjusted workers in Mizoram in 1961. It may be noted that for Assam, which included Mizoram in 1961 and 1971, the adjusted 1961 CWRs differ only marginally for females as well as for males.

Sources: For 1971 and 1981: Census of India, 1981, paper 3 of 1981, Population totals, workers and nonworkers table 2 pp 37-41. and Census of India 1971, Series 1-India, Part II-A(ii) Union Primary Census Abstract pp xxviii and p xxx
For 1961: Census of India 1971, Series -1 - India, Miscellaneous studies paper 1 of 1974, Report on Resurvey on Economic Questions-some Results, table5, pages 18 and 19.

Table 6b :- Crude Worker Rates Males, Main Workers Only 1961, 1971, 1981. Rural, urban and Rural plus Urban for 15 States.

States	Males - Rural			Males - Urban			Males-Total, Rural Plus Urban			
	1961 Adjusted[1] (1)	1971 (2)	1981 (3)	1961 Adjusted[1] (4)	1971 (5)	1981 (6)	1961 Adjusted[1] (7)	1971 (8)	1981 (9)	
1. Andhra Pradesh	64.49	60.24	58.48	52.34	49.90	48.62	62.34	58.22	56.16	
2. Bihar	53.26	52.73	49.93	56.85	47.48	43.52	56.94	52.16	49.08	
3. Gujarat	51.83	52.03	53.07	49.17	47.29	48.97	53.34	51.24	51.77	
4. Haryana	52.23	47.50	47.56	48.27	46.19	50.33	51.54	47.27	47.17	
5. Himachal Pradesh	56.68	52.26	48.39	59.70	54.53	53.25	56.91	52.43	48.81	
6. Karnataka (Mysore)	58.94	56.43	56.28	50.66	48.27	47.70	56.97	54.40	53.79	
7. Kerala	46.18	45.29	40.90	44.68	43.51	40.22	45.95	45.00	40.77	
8. Madhya Pradesh	61.30	55.28	55.21	51.63	46.17	46.70	59.85	53.74	53.43	
9. Maharashtra	58.07	52.60	53.25	54.90	51.06	50.23	57.11	52.09	52.14	
10. Orissa	61.58	55.79	55.11	57.51	50.63	49.35	61.29	55.32	54.38	
11. Punjab	55.10	53.75	52.48	51.51	49.88	50.82	54.26	52.82	52.01	
12. Rajasthan	58.60	53.63	50.79	47.72	45.08	45.47	56.81	52.09	49.65	
13. Tamil Nadu	61.56	58.55	57.84	52.91	50.29	50.42	59.22	56.02	55.36	
14. Uttar Pradesh	53.80	52.98	50.17	45.77	47.85	47.10	52.21	52.24	49.61	
15. West Bengal	53.05	48.48	49.18	49.80	49.80	48.43	53.69	48.83	48.97	
All India excluding Assam, and Jammu and Kashmir[1]	57.11	53.62	52.21	51.59	48.82	48.18	55.97	52.61	51.23	

1. Notes and Sources as in table 6 a.

Table 6 c: Crude Worker Rates, Females Main Workers Only, 1961, 1971 and 1981. Rural, Urban, and Rural plus Urban, for 15 States.

State	Females - Rural			Females - Urban			Females-Rural plus Urban		
	1961 Adjusted[1]	1971	1981	1961 Adjusted[1]	1971	1981	1961 Adjusted[1]	1971	1981
1. Andhra Pradesh	40.25	27.37	32.85	16.49	10.54	11.11	36.17	24.16	27.87
2. Bihar	23.96	19.31	9.81	9.63	4.54	4.20	22.87	8.84	9.16
3. Gujarat	25.95	12.07	14.49	5.97	5.48	5.80	20.93	10.26	11.85
4. Haryana	18.85	2.29	5.04	3.61	3.00	4.04	16.27	2.41	4.82
5. Himachal Pradesh	31.52	21.69	19.49	6.46	7.06	9.53	30.22	20.79	18.80
6. Karnataka	30.58	15.77	22.61	13.81	9.16	10.28	26.93	14.20	19.23
7. Kerala	18.31	14.08	13.49	11.27	10.42	9.71	17.26	13.49	12.79
8. Madhya Pradesh	43.99	20.75	26.11	12.42	7.26	8.39	39.72	18.65	22.63
9. Maharashtra	43.15	24.39	31.94	13.25	8.31	9.25	35.39	19.70	24.39
10. Orissa	20.79	6.83	11.27	10.88	6.56	7.70	20.24	6.81	10.68
11. Punjab	4.51	0.72	2.83	4.03	2.66	4.57	4.41	1.18	3.09
12. Rajasthan	30.43	9.27	10.70	7.90	3.86	4.55	26.81	9.34	9.44
13. Tamil Nadu	33.63	11.62	28.06	11.95	9.14	11.22	27.93	15.09	22.57
14. Uttar Pradesh	11.47	7.27	6.54	1.43	3.10	3.58	10.26	6.71	6.02
15. West Bengal	11.48	4.58	6.27	3.92	3.92	5.05	9.95	4.43	5.97
All India excluding Assam, and Jammu and Kashmir[1]	25.64	13.44	16.49	9.19	6.68	7.57	22.79	12.13	14.44

1. Notes and Sources as in Table 6a:

However, the longer term trend from 1961 to 1981 is downward, for persons, for males, and for females, although the decline for females is less marked than the 1961 CWRs would suggest. (It may be recaolled that the female 1961 figures includes a significant "busy season effect"). Thus, what can be concluded broadly, is that the employment situation which was deteriorating from 1961 to 1971 has in the recent decade started to improve. This is welcome news.

A second order question is: does the fall in male CWRs (for main workers), and the rise those for females, necessarily imply a worsining in the condition of the former, and an improvement in the case of women. A comparison of the separate rural and urban data for men may help answer this question for them. More complex factors may need to be taken into account in addition, for females.

It is observed, in the case of males that for India as a whole, the CWR's for urban areas are lower than for rural areas. This is true for 1961, 1971 and 1981. It is also the case for all states except Himachal Pradesh, and in 1981 only, also Haryana. Thus in general a proportionate rise in urban population should be expected to pull down total male worker participation rates, even if worker rates in both rural and urban centres remained constant. In recent India experience however, male CWR's in fact fell in both rural and urban areas separately. Nevertheless, the impact of the rural to urban shift on total CWR's, is clearly something which needs to be measured

before deriving firm conclusions on the basis of CWRs for rural and urban areas combined. Further, the age distribution of the work force in both areas needs to be taken into account. It is quite possible that for the age group 15 to 60 in India, that in 1981 the male CWRs actually rose. Unfortunately, the necessary 1981 data is not available yet. When it does become available, the result for males in the prime working age group may be an improvement rather than a deterioration, even in terms of main workers only.

For females, at the national level, the same rural-urban picture emerges, but the contrast is typically much greater. Punjab is the only state where urban female participation rates are substantially above rural ones. As in the case of males, a shift of population from rural to urban areas tends to depress total female worker ratio, other things remaining the same. However, other things have not remained the same. In both rural and urban areas, female CWR's have risen during the past decade. If this pattern continues in future, it will take a very large rural to urban shifts to reduce the total (rural plus urban) worker rates. However, as in the males case, the change of residence factor does tend to depress the combined result.

x x x

Table 7, using "adjusted 1961" figures to derive the share of workers in agriculture could not be prepared at the state level in time. At the all-India level, however, the results are extremely intresting.

The use of "adjusted 1961" data for males (main workers only) generates only slightly different figures from those given in table1 based on unadjusted 1961 data. The all India picture remains the same. From 1961 to 1971 the share of agricultural workers rises. From 1971 to 1981 it falls.

While the fomposition of female agricultural workers under goes a sea-change in the first decade, due to the collapse in the numher of cultivators reported even in absolute terms,[1] this is more than compensated for by the rise in the share of agricultural labourers, although in terms of absolute numbers, there was a sharp decline in female agricultural labourers as well[2]. The combined effect, among female main workers is an increase agriculture's share in a set of total female workers whose absolute number has fallen from more than 46 million to only 31 million. Given the preciprtate fall in total female main workers, the change in agricultures share is of relatively little intrest. In short, for the 1961 to 1971 decade, what has to be explained is the shift of females out of the work force altogether. However, the decline in the share of female agricultural workers in themost recent decade, which is combined with a rise in female participation rates (see table 6c) is of some interest as the number of female cultivators has rises

1. The number of female cultivators (1961 adjusted) was 62, 639,000; in 1971 it was 26,367,000,

2. Female agricultural labourers: 1961 = 16,470,000 and 1971, only 10,492,000.

Table 7

Share of Cultivators, Agricultural Labourers, and Agricultural Workers in Total Workers, 1961 adjusted, 1971, and 1981, for India excluding Assam[1] and Jammu & Kashmir.
A. Male Workers (main)
B. Female Workers (main)
C. Persons (main workers only)

Year	Cultivators		Agricultural Labourers		Agricultural Workers	
	Share	Change in Share	Share	Change in Share	Share	Change in Share
A. Male Workers (Main)						
1961 Adjusted	51.32	*	13.49	*	64.81	*
1971	45.73	- 5.59	21.70	+ 8.21	67.44	+ 2.63
1981	43.77	- 1.96	19.77	- 1.94	63.54	- 3.90
B. Female Workers (Main)						
1961	56.27	*	22.39	*	78.67	*
1971	29.73	-28.54	50.99	+28.60	80.72	+ 2.05
1981	33.03	+ 3.30	45.70	- 5.29	78.58	- 2.14
C. Persons (Main Workers)						
1961	52.71	*	15.96	*	68.67	*
1971	42.90	- 9.81	26.88	+10.92	69.78	+ 1.11
1981	41.52	- 1.38	25.16	- 1.72	66.86	- 2.92

Source: Cnesus documents as in table 6.

Note : It was not possible to add back Mizoram in the 1961 adjusted figures.

much faster than the number of agricultural labourers.

The combined impact of changes in work participation rates, and shifts in the occupational structure for males and f female workers together, is reflected in the figures in part C of table 7. There has been a proportionate shift of main workers out of agriculture for males and females combined.

These findings, using adjusted 1961 data, and main workers only, are consistent with both those of Krishnamurty and with the data in table 6 of J.N.Sinha's 1982 paper.[1] The validity of the latters statement that 'the change in the structure of the workforce is largely conceptual'[2] stands or falls according to the correctness of his view that the 1981 Census suffers from serious under-enumeration problems. More recent studies suggest that this is not the case[3].

In short, the proportionate shift of workers out of agriculture is a real phenomenon. Moreover, its impact on some indicators of the state of the agrarian economy are perciptible. For example, in the absence of the shift (that is if there had been the same proportion of total workers in agriculture in 1981 as in 1970) the man-land ratio would have been 0.83. Given the shift, the figure is only 0.77,[4] which is certainly worse than in 1971, but not nearly as bad as it could

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1. Opus cit.
2. Ibid p 195
3. see K.S.Natarajan and K.K.Unni 1983 op cit
4. Mand land ratios, defined as male workers divided by Net Sown Area, were 0.60 in 1961, and 0.69 in 1971.

have been if the occupational structure changes in the recent decade had been in the same direction as those of 1961 to 1971. However, to establish whether or not these shifts constitute a healthy development, a great deal of further work is clearly required. State wise calculations of real wages in agriculture are underway in the hope that this may shift some light on the changing condition of the agricultural labourers, whose declining share in the workforce is a new phenomenon. It is proposed to assemble comparable S.D.P. data by industry of origin, to derive comparable cross section estimates of output per worker, among other things.

Of even grater interest may be the factors which lie behind this shift. One of them is likely to be the observed decline in the elasticity of employment with respect to agricultural output. For male agricultural workers, in ten states prelemenary work suggests that the elasticities are lower in the recent decade as compared to 1961 to 1971. There is also evidence that in the 1970s , unlike the 1961-71 period, there is no obvious relationship between agricultural output growth and changes in the share of agricultural workers. While in the 1960's, it appears that factors within agriculture could be associated with variations in the share of agricultural workers, this may no longer be true. It is anticipated that while some of the explanation for the recent shift out of agriculture may be found within agriculture itself, a large part of the reversal of the trend will be traceable to forces outside of agriculture. Even in states which enjoyed higher agricultural growth rates in the

1970's as compared to the 1960's decade, the shift out of agriculture has taken place.

In short the questions which need to be answered now are : where did they go? and, why did they go? So as not to prejudge the issue, it is well to remember that in principle people shift because they think they will be better off in the new location or job. However, if a sharp reduction in welfare has preceded the shift, such as loss of land, drought or flood, or even caste persecution, then the observed proportionate shifts may be symptomatic of a general fall in well being, and the new occupation need not be an improvement over the old "pre-calamity" situation.

Obviously a great deal of detective work has to be done.

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POVERTY, UNEMPLOYMENT AND LEVELS OF LIVING IN INDIA

by

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Economic development is a dynamic process and is characterized by marked shifts in the relative importance of different industries, occupations, standard of living, distribution of income, etc. It, thus, involves a change - a change in structure, function and resource allocation. During the last three decades of planning, the Indian economy has witnessed a number of changes in the structure and organisation of production and from these points of view the Indian economy stands on different footing today. However, it is a sorry state of affairs that some of the major basic problems are no less serious today than what they were thirty years back. Problems of poverty, unemployment and levels of living are three of such problems which are the subject-matter of the present paper.

It may appear paradoxical but it is true that in spite of planned efforts to eradicate, or at least mitigate it, the problem of poverty has been increasing in India. Although the average per capita income (at 1970-71 prices) has increased from Rs.466 in 1950-51 to Rs.720 in 1981-82, "it has not been possible to make a major dent on poverty."[1] Similarly, the magnitude of unemployment has been increasing with successive Plans. It must be admitted at the outset that the problem of unemployment in developing countries is quite distinct from the problem of unemployment in developed countries. Whereas in the developed countries the problem of un-

employment is mainly the outcome of cyclical and technological factors, a high percentage of population in underdeveloped countries depend on primary occupation with a very low resource base, low income and saving potential. The result is that there is widespread unemployment and disguised unemployment* or underemployment in such countries and great inequalities in levels of income and wealth are evident. In fact, a close relationship exists between poverty, unemployment and levels of living. Because a man is poor, he is unable to make his both ends meet, leads a lower standard of living and is deprived of education and thus reduces his prospects of better employment. Similarly, a person who is unemployed or underemployed can hardly make his both ends meet and falls below the poverty line. Thus, poverty, unemployment and levels of living are closely related and unless we try to tackle these problems simultaneously, all our efforts through Planning will remain an exercise in statistical futility.

At the outset, it must be noted that the term 'poverty' can be defined satisfactorily only in terms relative to the society in which it is found. Concept of poverty can be understood either in absolute sense or in relative sense. In the relative sense, poverty is related to the income or consumption-expenditure distribution and "that section of the population whose resources are so depressed from the mean as to be deprived of enjoying the benefits and participating in the activities which are customary in that

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* The disguised unemployed are those persons who work on their own account and who are so numerous, relatively to the resources with which they work that if a number of them were withdrawn for work in other sectors of the economy, the total output of the sector from which they were withdrawn would not be diminished... United Nations, Measures for the Economic Development of Underdeveloped Countries, 1951, p.7.

society can be said to be in poverty."[2] Under this concept, income or consumption distribution in different fractile groups is estimated and a comparison between standards of living of the top 5 to 10 and the bottom 5 to 10 per cent of the population is made to determine the relative standards of poverty. However, this relative concept is more useful for developed countries where levels of per capita income are already so high that people are nearly assured not only of necessities of life but are also able to afford some comforts. In underdeveloped countries, on the other hand, a large section of the population consists of those who earn so little as not to be able to provide the minimum needed to maintain health and working capacity. Hence, the concept of absolute poverty is generally adopted for the purpose in such economies. Under this concept absolute norms of living in physical terms are first laid down and then these physical quantities are converted into monetary terms through price quotations. Here also, the norm of living can be laid down either in terms of 'reasonable level of living' or in terms of 'minimum levels of living'. In India the latter approach has been adopted probably because it reduces the gravity of the problem. Once the norm is changed to 'reasonable level of living', the vision of a good life widens, the cost of poverty alleviating programmes may become prohibitive and the government may be subjected to more severe political criticism. Nevertheless, in a poor country like India, the phenomenon of poverty is so obvious that refinements of the concept will not materially alter the picture.[3] It is the prevalence of this mass poverty which has brought to the forefront the inadequacy of growth models of the West which neglect the parameters of distribution. Professor P.C. Joshi, has, therefore, rightly observed that "Economic development

in our case has to be defined not merely as an increase in the G.N.P. but as a war against mass poverty. As a logical corollary, economic science has also to acquire a new form. From 'An Inquiry into the Wealth of Nations' it has to be transformed into 'An Enquiry into the Poverty of Nation'."[4]

Extent of Poverty

Poverty has been a regular and perennial problem in India. Dr. Dadabhai Naoroji was the first Indian to draw attention towards widespread poverty in the country when he observed that "...even for such food and clothing as a criminal obtains, there is hardly enough of production even in a good season...."[5] The main cause of India's poverty, according to Dadabhai, was the enormous 'drain' of the produce of the country to England 'chiefly arising from the political position it held over India'. However, serious attempts to measure the extent of poverty have only been made in India after Independence. Some of such important studies have been made by P.D. Ojha,[6] E.P.W. Da Costa,[7] P.K. Bardhan, B.S. Minhas,[8] V.M. Dandekar and N. Rath,[9] the FICCI[10] and the Planning Commission.[11]

Most of the studies noted above have assumed the value of food for a calorie intake of 2250 per day as the basic and have then proceeded to convert them into per capita food expenditure to find out how many people were not spending even that much so that they may be included in the category of persons below the poverty line. Since majority of the rural people are producers

of foodgrains themselves, a lower level of per capita food expenditure for rural areas has generally been taken as the basis to account for differences in the cost of living between rural and urban areas. In 1977, the Planning Commission set up a 'Task Force on Projections of Minimum Needs and Effective Consumption demand' which defined the poverty line as the mid-point of the monthly per capita expenditure class having a daily calorie intake of 2400 per person in rural areas and 2100 in urban areas. At 1979-80 prices, the mid points worked out to Rs.76 per month (Rs.912 per annum) in rural areas and Rs.88 per month (Rs.1056 per annum) in urban areas.

No doubt, there are marked variations in the various estimates of poverty in India due to the differences in methodologies adopted, class of people covered, period taken, etc. However, certain broad common conclusions can be drawn from these estimates and the profile regarding the extent of poverty in India. Firstly, the absolute number of poor has certainly increased over the years. For example, Ojha pointed out that in rural areas, the number of people below the poverty line increased from 184.2 million in 1960-61 to 289.0 million in 1967-68. Bardhan observed that their number increased from 131.1 million to 220.5 million during the same period. Dandekar and Rath pointed out that the total number of people below the poverty line increased from 177 million in 1960-61 to 215.5 million in 1967-68 (in rural areas from 135.0 million to 166.4 million and in urban areas from 42.0 million to 49.0 million). Even according to the Planning Commission, the total number of people below the poverty line increased from 302.76 million in 1977-78 to 316.84 million in

1979-80 (in rural areas from 251.66 million to 259.56 million and in urban areas from 51.10 million to 57.28 million). Secondly, the percentage of population below the poverty line has not decreased, though economists like Dandekar and Rath prefer to argue that poverty has not increased. The study by Ojha points out that the percentage of people below the poverty line in rural areas increased from 51.8 in 1960-61 to 70.0 in 1967-68 and P.K. Bardhan says that it increased from 38 per cent to 53 per cent during the same period. The estimates of Dandekar and Rath put the percentage figures for rural and urban areas at 40 and 50 respectively, for the years 1960-61 and 1967-68. Recent estimates of the Planning Commission point out that for the country as a whole the percentage of people below the poverty line has marginally gone down from 51.49 in 1972-73 to 48.13 in 1977-78 and in 1979-80 this figure stood at 48.44. Thus, nearly 50 per cent of our population has been living below the poverty line continuously over a long period. Thirdly, majority of the poor live in rural areas--both in terms of absolute numbers and percentages. For example, the study by Dandekar and Rath reveals that about 77 per cent (166.4 million) of the total number of people below poverty line (215.5 million) lived in rural areas, although it must also be remembered that India is basically an agricultural country where nearly 80 per cent of the population lives in villages and agriculture provides livelihood to over 70 per cent of its work force. Similarly, in 1979-80 out of a total of 316.84 million persons below the poverty line, about 82 per cent lived in rural areas. Further, whereas the percentage of people living below the poverty in rural areas was 54.09 in 1972-73 and 50.70 in 1979-80, the corresponding percentage

were 41.22 and 40.31 in urban areas.[12] Majority of the poor living in rural areas belong to the categories of landless labourers, small and marginal farmers, rural artisans, scheduled class and backward class who either have no assets, or even if they have some, their productivity is so low as to keep them below the poverty line. The average monthly per capita expenditure of people below the poverty line came to Rs.51.27 in rural areas in 1979-80--far below the minimum prescribed for the poverty line.

A state-wise analysis of concentration of poverty ratios shows that poverty is concentrated more in the States with relatively lower per capita State domestic product. For example, the study by the Federation of Indian Chambers of Commerce and Industry shows that on Oct. 1, 1969, the All India percentage of population below the poverty line was 41.2. Whereas in relatively backward States like Orissa, Bihar, Rajasthan, Madhya Pradesh, Uttar Pradesh, etc., this percentage was higher than the national average, in relatively prosperous States like Tamil Nadu, West Bengal, Maharashtra, Gujarat, Haryana and Punjab, this percentage was below the average. Later on, data given in the Report of the Seventh Finance Commission[13] (Table 1) confirm this point. Whereas Bihar had 10.41 per cent of the population, its poverty percentage was 12.82. Madhya Pradesh had 7.69 per cent population and 8.51 poverty percentage, Orissa had 4.05 per cent population and 5.26 poverty percentage. On the other hand, States like Punjab Maharashtra, Haryana and Gujarat had lower poverty percentage than the population percentage.

A detailed analysis of poverty percentages among different States clearly reveal that there are marked difference amongst the States inter se. (Table 2) Whereas the All India combined percentage of population below the poverty line was 52.00 in 1970-71, the percentage was as high as 67.50 in Orissa, 64.06 in Bihar, 62.20 in West Bengal, and 62.75 in Kerala. It was as low as 21.62 in Punjab and 33.24 in Haryana. In 1977-78, also, such marked difference in poverty percentages are evident. Against the national average of 48.13 per cent, the percentage of population below the poverty line was as high as 66.04 in Orissa and as low as 15.13 in Punjab. A disturbing phenomenon that has occurred between 1970-71 and 1977-78 relating to changes in poverty percentages is that whereas in most of the States the general trend has been towards a decline in poverty percentages, the decline has been faster in relatively prosperous States like Gujarat, Haryana, Kerala, Punjab, Tamil Nadu and West Bengal and the decline has been slower in States like Bihar, Orissa and Uttar Pradesh--thus leading one to infer that inter-state disparities have increased. In Assam, the poverty percentage has, in fact, gone up from 32.95 to 51.10. In Maharashtra, the poverty percentage has increased from 43.99 in 1970-71 to 47.21 in 1977-78 which can be explained only by a possible increase in disparities in the distributions of income and wealth within the State.

Extent of Unemployment

With the passage of time, not only the number of people below the poverty line increased in India but the problem of unemployment has also gone from bad to worse. Problem of

unemployment, particularly in rural areas has been a burning question for the whole nation. Although a number of attempts have been made during the last 30 years to deal with the problem of unemployment, their results have only been marginal partly due to the adoption of technologies which required larger use of capital and consequently lesser use of labour but mainly due to rapid increase in our population which has increased at an average rate of about 2.5 per cent per annum. The Second Five Year Plan realised that population in India was growing at a very rapid rate and cautioned that "Even with the utmost effort which can be made--and has to be made--at this stage to bring down birth rates, population pressure is likely to become more acute in the coming years."[14] The result has been that with every successive Plan, the backlog of unemployed persons has increased.

The Second Five Year Plan started with a backlog of unemployed persons of the order of 5.3 million. The expected addition to the labour force during the Second Plan was 10 million. Thus, total employment required to be generated was 15.3 million. Against this, the additional employment opportunities generated amounted to 8 million (of which 6.5 million were outside agriculture). As a result, unemployment increased to 9 million at the end of the Second Plan. With an estimated addition to the labour force of about 17 million during the Third Plan there was the problem of creating jobs for 26 million people. In 1966, it was estimated that employment generated during the Third Plan was 14.5 million (of which 10.5 million was outside agriculture). Thus, the backlog of un-employed persons at the end of the Third Plan was about 11.5 million.

In view of considerable divergence of opinion regarding appropriate definitions of and suitable yardsticks for measuring under-employment and un-employment, the Fourth Five Year Plan (1969-74) did not give any estimate of backlog of unemployed persons because, in its view, such estimates were "in the nature of a guess." Instead, an Expert Committee on Unemployment was set up by the Government in December 1970 to assess the extent of unemployment and under-employment and suggest suitable measures. The Committee, in its final Report submitted on May 15, 1973, pointed out that the likely number of unemployed persons in 1971 was 18.7 million, including 9 million who were unemployed and 9.7 million who worked less than 14 hours a week and who might be treated at par with the unemployed persons. This included 16.1 million unemployed persons in rural areas and 2.6 million unemployed persons in urban areas.

However, chronic or 'usual status' is not the only problem in India. In fact, it forms a very small part of the Indian unemployment because very few workers remained unemployed throughout the year.* Millions of them find some work for some weeks or months and are forced into idleness in the rest of the year. Hence, more pervasive malady is under-employment or less productive employment. In rural areas, the demand for labour fluctuates from season to season which is the principal cause of under-employment in the country-side. Therefore, there has also to be some estimate of irregular unemployment. For assessing the magnitude of under-employment or seasonal unemployment,

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*The Sixth Five Year Plan (1980-85) puts the figure of chronic or 'usual status' unemployment at 12.02 million for March, 1980.

two concepts are in vogue on the basis of the parameters provided by the 27th and 32nd rounds of National Sample Survey--(1) Weekly Status, and (2) daily status of the worker. Under the 'Weekly Status' concept, a person is treated as unemployed if he does not find even an hour of work during the survey week, and is searching or available for work. The number of such persons was 10.1 million in 1973; 12.18 million in 1978 and 11.36 million in 1980. But the unemployment rates based on weekly status understate the extent of under-employment because any person who is available for work and has worked even for ane hour during the preceding seven days is considered employed and excluded from the category of unemployed. Hence, the incidence of irregular unemployment as reflected in 'daily status' concept is now regarded as the most inclusive and significant indicator of the magnitude of unemployment in the country. Under this concept, unemployed <u>days</u>** rather than unemployed <u>persons</u> are counted. According to the 'daily status' basis, the figures of unemployment have been put at 18.6 million for 1973, 20.6 million for 1978[15] and 20.74 million for 1980.[16] In addition, the unemployment rate in 1977-78 measured as the ratio of person-years unemployed to person-years available turned out to be 8.18 per cent on the basis of 32nd round of the National Sample Survey. Although the Indian unemployment rate is comparable to unemployment rates prevailing in some Asian countries, this comparison is not very significant because "in India the absolute volume of unemployment at present... is staggeringly

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** Under the 'daily status' concept, a person who works at least for one hour but less than four hours is considered having worked for half a day. If he works for four hours or more during a day, he is considered as employed for the whole day.

large, and larger than in any country in the world for which any unemployment statistics are available."[17]

A look at the distribution of unemployment rates and the relative position of different States in unemployment also goes to reveal that there are marked variations. Table 3 gives the percentage figures of daily status unemployment by States for the years 1972-73 and 1977-78. In 1972-73, whereas the unemployment rate was as high as 25.23 per cent in Kerala, it was as low as 0.82 in Himachal Pradesh. Similarly, the unemployment rate in 1977-78 was as high as 25.69 in Kerala and 15.59 in Tamil Nadu, it was as low as 1.81 in Assam and 1.92 in Himachal Pradesh. A significant finding that emerges from these data is that whereas relatively prosperous States like Tamil Nadu, Maharashtra, West Bengal, Karnataka, had a higher share in all India unemployment than their share in all India labour force, some of the relatively backward States like Madhya Pradesh, Rajasthan and Uttar Pradesh had a lower share in all India unemployment than their share in all-India labour force; although it must be admitted that some of the prosperous States like Punjab, Haryana, and Gujarat had a lower share in unemployment as compared to their share in labour force and relatively backward States like Bihar and Orissa, had a higher share in unemployment as compared to their share in labour force. Further, between 1972-73 and 1977-78, whereas the share of some prosperous States like Tamil Nadu, Kerala, West Bengal, Karnataka, Gujarat, Punjab, Haryana in all-India unemployment increased, the corresponding share of some relatively backward States like Bihar, Orissa, Madhya Pradesh, Rajasthan and Assam went down. The general phenomenon

of higher unemployment rate among the relatively prosperous States and lower unemployment rate among the relatively poorer States can be explained if we look to the literacy rates prevailing in these States. An educated man is relatively more specific about the nature of job and has a general preference for white-collar jobs. Against this, an illiterate man is prepared to perform any type of job available to him. It is possibly for this reason that in 1981, whereas Kerala had the highest literacy rate of 69.17 per cent against the national average of 36.17 per cent, it also had the highest unemployment rate of 25.69 per cent in 1977-78. Tamil Nadu had a literacy rate of 45.78 per cent and also a higher unemployment rate of 15.59 per cent. Against this, in Uttar Pradesh the literacy rate was 27.38 and unemployment rate was 4.12. In Madhya Pradesh, the respective figures were 27.82 and 3.09 and in Rajasthan they were 24.05 and 2.99, respectively. Further, it is a well-known fact that between 1961 and 1976, the compound rate of increase in unemployment among relatively highly educated persons has been higher as compared to the matriculates which has reduced the share of matriculates among the educated unemployed from 78.5 per cent in 1961 to 55.4 per cent in 1976, under-graduates increased from 12 per cent to 24.6 per cent and of graduates and post-graduates has gone up from 9.5 per cent to 20.0 per cent during the same period.

A State-wise review of the incidence of unemployment also reveals that in 1977-78, more than 2/3 (67.89 per cent) of total unemployment was concentrated in six States of Tamil Nadu, Andhra Pradesh, Maharashtra, Bihar, Kerala and West Bengal. If Uttar

Pradesh is added to the list, nearly 3/4 (74.90 per cent) unemployment is found in these seven states.

Like the prevalence of poverty in rural areas, the problem of unemployment and under-employment in India is also concentrated in rural areas. Nearly 80 per cent of India's unemployed labour force is found in rural areas. In 1978, out of 20.6 million person-years un-employed, 16.5 million were in rural areas. The incidence of periodic unemployment, as reflected in 'daily status', has been particularly severe among agricultural labour households. Rural Labour Enquiry estimated that in 1974-75 there were about 25 million rural labour households in the country of which about 21 million were agricultural labour households. Over 50 per cent of the agricultural labourers did not have any land base. Those who owned some land were marginal farmers operating uneconomic holdings. A significant finding that emerges from the analysis of the NSS (32nd round) data is that in 1977-78 the rural agricultural labour households covered about 21.2 per cent of the all India population but accounted for 46.7 per cent of the total daily status unemployment. The reason for high concentration of unemployment and under-employment in rural areas can partly be explained by the fact that over the last six decennial Censuses (1911-1971), in spite of impressive development of the large-scale manufacturing and infra-structure sectors, the share of agriculture in the work force has not diminished at all and the fact remains that "in India fairly rapid growth in the non-agricultural sectors in the last 25 years of planned development has completely failed to make any noticeable impact on the industrial distribution of the work force."[18] Further, "employment growth in these

sectors has been insufficient to absorb an increasing proportion of the labour force. Investment and output have grown at a high rate but the production-mix and the technology-mix have been so capital-intensive that employment did not grow pari passu."[19] We feel that there has also been wrong with the models adopted in India's Five Year Plans. "It is a pity that our Planners have so far tried to transplant foreign models on the Indian soil, forgetting that the conditions presumed in those models do not operate in India".[20] No doubt, modern economists visualize an important role for agriculture during the development process but they visualize such an agricultural development strategy that will release labour from agriculture rather than absorb them in agriculture. However, we feel that sufficient employment opportunities can be created in the agricultural sector itself by adopting appropriate agricultural technologies and by adopting appropriate institutional reforms in the pattern of land ownership.[21]

Levels of Living

Although the level of living of a household is dependent on a large number of factors like demographic conditions, health, food, clothing, housing, manner of living, education, cultural pursuits, social security, etc., in the absence of precise indices of these factors and marked variations in their costs from region to region, per capita consumer expenditure has been treated as a more approximate indicator of levels of living. It is a well-known fact that the standard of living of the rest majority of people in India is very low. What is worse is the fact that it has increased very little over the years. No doubt,

per capita final consumption expenditure at current prices has gone up from Rs.551.5 in 1970-71 to Rs.1126.8 in 1979-80, but, if viewed in terms of constant prices (1970-71 = 100), the increase is insignificant because per capita final consumption expenditure has increased from Rs.551.5 in 1970-71 to Rs.560.2 in 1979-80. The per capita net availability of foodgrains--a major component of household expenditure--has gone up from 430.9 grammes in 1956 to 459.5 grammes in 1981. In fact, the per capita net availability of pulses has gone down from 70.4 grammes in 1956 to 39.1 grammes in 1981. What is more significant is the fact that distribution of household consumption expenditure is very uneven in the country and this unevenness is more marked in urban areas as compared to the rural areas. For example, in 1977-78, top 30 per cent of households in urban areas were spending 54 per cent and in rural areas they were spending 51.9 per cent. The corresponding percentages for the bottom 30 per cent of the households were 13.6 and 15.0, respectively.

In the absence of the availability of data on per capita final consumption expenditure in different States separately, we can equally rely on the figures of per capita net domestic product in different States to compare the differences in the levels of living because income is the most important determinant of consumption and so also the levels of living. No doubt, there are differences in cost of living in different States but these differences are not so marked as to eliminate the impact of differences in per capita income on the levels of living.

Table 4 gives the state-wise estimates of per capita net domestic product for the years 1971-72, 1975-76 and 1979-80. At current prices, whereas the per capita income for the country as a whole in 1979-80 was Rs.1316, there were marked differences amongst the States. Punjab had the highest per capita NDP (Rs.2278), followed by Maharashtra (Rs.2021), Haryana (Rs.1867), and Gujarat (Rs.1658). Against this, Bihar had the lowest per capita NDP (Rs.795). It was Rs.843 in Orissa, Rs.877 in Madhya Pradesh and Rs.994 in Uttar Pradesh. Even in terms of constant prices (1970-71 = 100) the discrepancies are equally marked. Against the national averate of Rs.661 in 1979-80, per capita NDP was Rs.1321 in Punjab, Rs.993 in Maharashtra and only Rs.393 in Madhya Pradesh Rs.405 in Bihar and Rs.436 in Uttar Pradesh. What is still more significant is the fact that between 1971-72 and 1979-80 while the per capita NDP (at 1970-71 prices) in some of the backward States like Assam, Bihar, Himachal Pradesh, Madhya Pradesh, Rajasthan and Uttar Pradesh declined, there was increased in the per capita NDP (although of different orders) in the relatively prosperous States--thus increasing the differences in the per capita income, and so also in the levels of living amongst the States.

The Way Out

The above discussion amply demonstrates that problems of poverty, unemployment and levels of living are inter-related and attempts to solve or minimise one without trying to solve or reduce the other, are not going to bear much fruits. Although a number of attempts have been made during the last three decades to deal with the un-employment and under-employment

problems, the net impact, as has already been observed, has not been commensurate with efforts laid down in the Plan Documents. "The successive plans did not specifically mention 'elimination of poverty' as a major objective of Planning, but did emphasize the goal of a sizeable increase in national income so as to raise the levels of living in the country, a large expansion of employment opportunities, and reduction in inequalities in income and wealth."[22] It is only after the publication of the internationally renowned work Asian Drama of Professor Gunnar Myrdal that the Indian Government (as usual) has given top priority to alleviation of poverty in the Plan Document. The Fifth Five Year Plan (1974-79) Document, for the first time, stated that "The existence of poverty is incompatible with the vision of an advanced, prosperous, democratic, egalitarian and just society implied with concept of a socialist pattern of development. In fact, it holds a potential threat to the unity, integrity and independence of the country."[23] The Sixth Five Year Plan (1980-85) has outlined the objective of 'a progressive reduction in the incidence of poverty and unemployment' as a major objective and it states that "a substantial reduction in poverty can be achieved only if there is a determined effort at a significant redistribution of income and consumption in favour of the poorer sections of the population."[24]

A number of programmes have been undertaken by the Government in the seventies with employment as one of the contents. The first of such programmes was the Rural Works Programme. Initiated in 1961 with an initial provision of Rs.150 crores, the programme was expected to generate employment for one lakh persons in the first year of the Plan and 2.5 million in the final year. However,

only Rs.19 crores was, in fact, spent. The Programme Evaluation Organization of the Planning Commission revealed a number of organizational deficiencies in the execution of the programme such as the shortage of technical and expert staff, delays in release of funds and technical sanctions, lack of proper coordination and active participation among the concerned technical departments, etc. The Small Farmers Development Agencies Programme, with which the Marginal Farmers and Agricultural Labour Development Agencies were merged, was started in 1971 and now covers 168 projects covering 1818 blocks over the country. Upto March 1980, the Agencies had identified 16.7 million persons from the target groups for assistance. The Drought Prone Areas Programme, which now covers 557 community development blocks in 74 districts of 13 states, was introduced in the mid-seventies and the Desert Development Programme which was started in 1977-78, now operates in 128 blocks of the country. During three years of its operation, an expenditure of Rs.23.21 crores had been made on the programme. Earlier, Crash Scheme for Rural Employment was initiated in 1971-72 and created employment to the tune of 3.15 lakh mandays in the three years of its operation. The Pilot Intensive Rural Employment Projects were launched in 1972 as action-cum-research studies for a period of 3 years in 15 selected blocks of the country. Two major activities taken up under the project were roads and minor irrigation works. But the results have not been commensurate with the expenditure incurred. Employment Guarantee Scheme of Maharashtra, though launched in 1970-71, could be implemented only from 1973-74 onwards. A sum of Rs.731.3 crores was spent between 1972-73 to 1976-77 and 243.1 million mandays were created under the scheme.

The problem with most of such schemes noted above has been that they have been taken up on an ad-hoc basis and had nearly similar constraints. While some schemes could not be implemented for lack of funds, there were others in which funds sanctioned could not be spent for lack of suitable projects. As such, "these special schemes both because of the relatively meagre resources devoted and because of lack of preparatory work have not and could not be expected to have made any impact on income distribution."[25] Critical evaluation of these projects and schemes even by Government agencies did not make any difference to the actual operation of these programmes. Professor Dantwala has rightly observed: "But of what avail are these evaluations? Every evaluation report has been narrating the same story for the last fifteen years; lack of competent, non-power seeking local leadership, red tape, audit obduracy, lack of inter-departmental co-ordination, if not active non-cooperation, bureaucratic ineptitute, lack of knowledge of local conditions, absence of prior survey and preparatory work. Perhaps a report can be written even prior to the evaluation and the subsequent field investigations can be guaranteed to confirm it."[26] (emphasis added)

Large stocks of foodgrains were available with the Government and the disposal of stocks was causing some concern. Accordingly, a Food for Work Programme was initiated in 1977-78 with the twin objectives of employment generation and development of a sound economic and social infrastructure in rural areas. Under the programme, wages were to be paid in kind and not in cash. The entire programme was grain-based and the entire expenditure was borne by the Central Government. In the first year of its operation, the consumption of foodgrains was only 1.3 lakh tonnes

which jumped to 12 lakh tonnes in 1978-79 and 23 lakh tonnes in 1979-80. The programme has also generated 372.8 million mandays of employment in 1978-79 and 600 to 700 million in 1979-80. This programme also helped in stabilization of wages and food prices in rural areas. However, due to limitations in respect of planning and supervision of works, ad hoc execution on the year-to-year basis, lack of desired interest on the part of the State Governments to plan, monitor and oversee the programme, a number of works of low priority with dubious utility were taken up. We feel that the biggest drawback of this FFW programme was that it was often executed through local contractors who, in most cases, paid low wages to the workers and made huge money by selling the food-grains in the open market at higher prices.

It is happy to note that the Sixth Five Year Plan has accorded highest priority to alleviation of poverty and substantial employment generation in the coming years. Towards this end, two separate programmes at the national level have been undertaken. The Integrated Rural Development Programme (IRDP) belongs to the first category and the National Rural Employment Programme (NREP) to the latter. "The main objective of the IRDP will be "to evolve an operationally integrated strategy... of increasing production and productivity in agriculture and allied sectors based on better use of land, water and sunlight and...of the resource and income development of vulnerable sections of the population in all the blocks of the country." The programme intends to cover 75 million people during the Sixth Plan for which an investment of Rs.1500 crores will be made by the Union and State Governments on equal basis, to be supplemented by Rs.3000 crores from institutional finance. The NREP is conceived, in the main, to take care of a

large number of landless agricultural labours. An outlay of Rs.980 crores has been provided in the Sixth Plan period for the programme in the Central Sector which will be matched by an equal amount from the State governments. This programme is expected to generate 300-400 million mandays of employment per year.

On the basis of past experience and the optimistic assumptions made regarding the success of these programmes, we feel that the programmes may not have the desired success. However, much will depend upon the extent to which the Government learns from the past failures and the extent to which it is able to inculcate the degree of honesty in appraising achievements, identifying problems and developing a new culture of openness in communication between different levels of the development hierarchy.

Finally, a country like India which is committed to accelerated growth, needs a strategy which would develop the growth contributing qualities of labour force. Wise planning of expenditure on education is crucial to such a strategy. It is a pity that educational planning in India (whatever little it has been) has so far emphasized the primary education and old literacy tradition in higher education and secondary and vocational education has received lower priority. The net result has been that there is shortage of trained manpower and surplus of unskilled labour. Therefore, "it is high time that the pattern of investment in education is changed so that growth contributing qualities may be generated in the labour force in India. This strategy will have to be accompanied by techniques of manpower planning because optimum utilisation of technical skill is as equally important as the building up of these skills by means of educational planning."[27]

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Table 1 : Population and Poverty Percentages

Sl. No.	States	Population Percentage	Poverty Percentage
1.	Andhra Pradesh	8.03	7.39
2.	Assam	2.70	1.71
3.	Bihar	10.41	12.82
4.	Gujarat	4.93	4.26
5.	Haryana	1.85	1.15
6.	Himachal Pradesh	0.64	0.42
7.	Jammu and Kashmir	0.85	0.52
8.	Karnataka	5.41	5.15
9.	Kerala	3.94	4.72
10.	Madhya Pradesh	7.69	8.51
11.	Maharashtra	9.31	7.88
12.	Manipur	0.20	0.12
13.	Meghalaya	0.19	0.12
14.	Nagaland	0.10	0.07
15.	Orissa	4.05	5.26
16.	Punjab	2.50	1.04
17.	Rajasthan	4.76	3.98
18.	Sikkim	0.04	0.02
19.	Tamil Nadu	7.61	8.88
20.	Tripura	0.29	0.37
21.	Uttar Pradesh	16.32	15.81
22.	West Bengal	8.18	9.80
	Total	100.00	100.00

Table 2 : Percentage of Population below the Poverty Line in Major States of India

States	1970-71*			1977-78**		
	Rural	Urban	Combined	Rural	Urban	Combined
Andhra Pradesh	45.63	57.14	47.85	43.89	35.68	42.18
Assam	33.95	22.66	32.95	52.65	37.37	51.10
Bihar	64.78	57.53	64.06	58.91	46.07	57.49
Gujarat	44.21	46.61	44.88	43.20	29.02	39.04
Haryana	20.43	45.36	33.24	23.25	31.74	24.84
Karnataka	48.85	51.29	49.44	49.88	43.97	48.34
Kerala	61.82	64.44	62.25	46.00	51.44	46.95
Madhya Pradesh	56.99	60.15	57.50	59.82	48.09	57.73
Maharashtra	46.67	38.07	43.99	55.85	31.62	47.71
Orissa	69.18	49.20	67.50	68.97	42.19	66.40
Punjab	17.47	34.94	21.62	11.87	24.66	15.13
Rajasthan	41.84	51.28	43.50	33.75	33.80	33.76
Tamil Nadu	61.32	59.20	60.71	55.68	44.79	52.12
Uttar Pradesh	48.02	64.88	50.38	50.23	49.24	50.09
West Bengal	70.82	36.30	62.20	58.94	34.71	52.54
All India	53.00	51.00	52.00	50.82	38.19	48.13

Source : *Report of the Finance Commission (1978), Appendix IV.9, p.214.

**Sixth Five Year Plan (1980-85), p.16.

Table 3 : Daily Status Unemployment by States

(Percentages)

States	1972-73			1977-78		
	Share of State in All India Labour Force	Share of State in All India Un employ-ment	Unemp-loyment rate	Share of State in All India Labour Force	Share of State in All India Un employ-ment	Unempl-oyment rate
Tamil Nadu	8.68	12.63	12.17	8.65	16.48	15.59
Andhra Pradesh	8.70	12.49	12.01	9.49	12.37	10.67
Maharashtra	10.26	11.93	9.73	10.41	10.16	7.99
Bihar	9.02	11.05	10.24	9.81	8.71	8.01
Kerala	3.35	10.11	25.23	3.54	11.09	25.69
West Bengal	6.90	8.79	10.66	7.33	9.08	10.15
Uttar Pradesh	14.86	6.54	3.68	13.92	7.01	4.12
Karnataka	5.78	6.36	9.20	5.78	6.61	9.36
Orissa	4.20	5.43	10.82	3.83	3.81	8.13
Madhya Pradesh	8.77	3.85	3.67	8.50	3.21	3.09
Gujarat	4.68	3.56	6.36	4.99	3.80	6.24
Rajasthan	5.89	2.62	3.72	5.26	1.92	2.99
Punjab	2.33	1.26	4.54	2.27	1.34	4.82
Haryana	1.61	0.79	4.10	1.56	1.22	6.41
Jammu & Kashmir	0.74	0.74	8.38	0.74	0.52	5.70
Assam	2.02	0.48	1.98	2.15	0.47	1.81
Himachal Pradesh	0.65	0.06	0.82	0.66	0.16	1.92
All India	100.00	100.00	8.34	100.00	100.00	8.18

Source : (1) Draft Five Year Plan 1978-83, p.94.

(2) Sixth Five Year Plan (1980-85), p.216.

Table 4 : State-wise Estimates of Per Capita Net Domestic Product

(In Rupees)

States	1971-72		1975-76		1979-80	
	Current Prices	Constant Prices*	Current Prices*	Constant prices*	Current Prices	Constant Prices*
Andhra Pradesh	620	591	881	623	1148	630
Assam	550	545	789	570	1083	533
Bihar	415	406	661	413	795	405
Gujarat	827	832	1239	818	1658	848
Haryana	939	870	1333	896	1867	931
Himachal Pradesh	716	680	1078	738	1288	646
Jammu & Kashmir	588	547	928	573	1254	616
Karnataka	698	683	1005	702	1246	696
Kerala	554	571	893	562	1141	555
Madhya Pradesh	534	507	781	497	977	393
Maharashtra	808	786	1385	877	2021	993
Manipur	466	409	807	482	822	438
Orissa	480	434	715	490	843	435
Punjab	1080	1046	1597	1133	2278	1321
Rajasthan	561	538	857	559	1011	524
Tamil Nadu	648	599	839	603	1274	698
Uttar Pradesh	497	451	730	481	994	436
West Bengal	789	745	1120	760	1390	706

*Base Year is 1970-71 = 100

Source : Indian Economic Statistics, Public Finance, December 1982, Ministry of Finance, Govt. of India, Economic Division.

B.B.B.

Regional Variations in Public Services : Structure, Growth and Determinants

V.G. Rao*

The multifaceted hydra-like problem of regional disparities requires action on several fronts if there has to be a perceptible decline in such disparities. Recognising this multi-dimensionality the researchers who have been working on the issues relating to Indian development problems tried to analyse the question of regional imbalances from different directions. A close scrutiny of these investigations, however, indicates that the aspect relating to public services, in particular, has received little attention. There are two major studies, namely, the works of Reddy and of Chelliah et.al. which have attempted to throw some light on this aspects.[1] A close reading of these, however, discloses that Reddy's study does not go into the question of guaging inter-regional disparities as such. It is directed towards the problem of identifying the factors that help explaining inter-state variations observed at a given point of time. Turning to the study of Chelliah et.al., the methodology adopted gives rise to some doubts about the inferences that have been drawn. These doubts arise on two accounts. Firstly, this study has not measured the inequality in terms of total expenditures incurred by the States, but preferred the use of partial measure, namely, the

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The author is indebted to Mr. O.P. Bohra for the statistical assistance and to Mr. R.S. Tyagi for competent typing assistance.

[1]a) Reddy, K.N., "Inter-State Differences in Social Consumption", Economic & Political Weekly, June 12, 1976.

b) Chelliah, R.J., et.al., Trends and Issues in Indian Federal Finance, New Delhi: Allied Publishers Pvt.Ltd., 1979.

expenditures incurred on the revenue account alone. Adoption of such a partial measure can be justified for some limited purpose, if the interest of an investigation lies in examining what has happened to public services and what the measure should also include expenditures incurred on capital account. It is well known that a public service would involve expenditure both in the revenue account as well as in the capital account. Secondly, this study measures the inequalities in terms of a set of gini coefficients; and the time profile indicated by such coefficients, for the period running from 1960-61 to 1975-76, as the bases for drawing the inferences. The results obtained with regard to the time trends were not presented. But the study does emphatically State that "the inequities in per capita aggregate expenditures show an increasing trend".[2] Presumably, this is done on the basis of a visual inspection of the time profiles indicated by the variable representing the inequality in per capita aggregate (revenue) expenditures. No doubt, the preferred inequality measure does show a perceptible increase if the comparison between any one year belonging to the period running from the year 1960-61 to 1968-69 and any one year belonging to the period running from the year 1969-70 to 1975-76 is made. It may, however, be noted that the time pattern indicated by the measure in question does show a clear shift in 1969-70 and virtually no change either in the period that proceed this year or in the period that followed this year. Then, can one infer that in the two periods the inequality has remained static? If so, what reasons can be ascribed to the sudden jump that has taken place in the fiscal year 1969-70? Perhaps, because of

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[2] Ibid., p.66.

this difficulty, the study has not given any explicit information regarding the behaviour of the aggregate expenditure variable. Given these limitations of the two studies which have been undertaken with reference to the public services dimension of the problem of regional imbalances, a further probe in this aspect would be of considerable interest and timely value. Accordingly, an attempt in this direction is pursued in the present study.

The specific issues that this study would try to seek answer comprise: (i) What is the nature and direction of change that have taken over years in regard to an index that facilitate capturing inter-state disparities in public services? (ii) Be the nature and direction indicated by an aggregate index cut across all major categories of public services? (iii) Are the observed changes in any manner related to the levels of public services attained in chosen reference years? (iv) Can some explicit factors be identified as being responsible for the observed changes?

The presentation of the above discussion is divided into six Sections. Section 2 describes the methodological framework of the study as well as the data base. Section 3 and Section 4 present the results which facilitate answering the first and the second questions. Section 5 tries to throw some light on the relationships between the observed rates of changes and the levels attained by the base years of each one of the changes. Section 6 makes an attempt to identify the influences of some of the plausible explanatory variables. Finally, the last Section brings together the main findings of the study.

2. Methodology

Following the practice generally being adopted by researchers working on the problem of regional disparities herein the States that constitute the Indian Union are identified as regions. It is true that several of the States are large both in territory and population; and all parts of a State do not indicate uniform development and prosperity levels to qualify themselves as a unified region. But, such an indepth regional identification warrants the use of multiple facts, which falls outside the limits of a paper like the present one. Also it may be observed that for majority of the Regional Planning exercises, the Planning Commission (at the Centre) deals with the States as units.

At present, excluding the new addition of Sikkim Indian Union consists of twenty one States and nine Union Territories, for majority of the policy purposes, all the twenty one States are not treated alike. Often they are grouped into two broad groups, namely, major States and special category States. The special category group consists of hilly and sparely populated States like Jammu & Kashmir, Himachal Pradesh, Manipur, Meghalaya, Nagaland and Tripura and these were treated separately. Exception being Jammu & Kashmir majority of these States were accorded the status of a State only in recent years. For quite some time, some of these were treated as Union Territories. Accordingly, to minimise all possible data and other statistical problems, the scope of this study is restricted to the group that consists of major States alone. However to ensure comparability on time scale, the State of Meghalaya, which was carved out of Assam, has been taken along with Assam.

The level of public services provided by a State is equated with the size of gross government expenditures measured at current prices. Ideally speaking, the user charges (for example school fees) are to be deducted from gross expenditures. But, this is not attempted for want of detailed item-wise data. While this may be considered as a limitation of the present analysis, this is not very specific to this study alone. By and large in all investigations dealing with public services of developing as well as developed economies only gross measure is being used.

Theoretically speaking in a study of the present type, the growth in public services could be measured in real units. Adoption of such measures warrants initial break down of expenditure category into two components, representing the goods and services that have been used for the purpose. Thus arrived individual heads are to be deflated with appropriate price indices to arrive at the real value of the expenditure. Evidently, such break-up is difficult, if not impossible, with the available data. An often suggested solution in this regard is to adopt a single price index for all components of an expenditure category. Even a preference to this unsatisfactory solution would give raise to a formidable question: which particular price index is to be used? one might advocate the use of SDP deflators. Such an index, however, is not free of its own limitation. The goods and services that enter into the consumption basket of government expenditures differ substantially from the basket implicit in an SDP deflator. In such a situation, one might advocate the use of price indices that may be constructed on the basis of wholesale prices. This, however, is not an easy solution to be practiced. It involves the use of differing weighting diagrams as well as the collection of State

level prices. In the wake of these difficulties, often a single price index is preferred. Such procedure is considered inappropriate for the purposes of the present analysis. Accordingly, this study does not attempt to make any price adjustments.

For accounting purposes, the expenditures incurred by a State are shown under two accounts, namely, the revenue and the capital accounts. Under this framework expenditure incurred on a given public service cannot easily be located under any one of the accounts. Some services, like extension of medical facilities, involves staff expenditure on revenue account and capital expenditure of capital account. Accordingly, in this exercise, this (revenue/capital) distinction is ignored. The expenditures incurred on both these accounts are added together to represent the aggregate level of public service provided by a State.

To facilitate meaningful inter-regional comparisons, the expenditures which are not normal and common in nature are to be omitted. As priori the relief expenditures used for meeting natural calamities are classified as non-normal expenditures. Similarly, the expenditures incurred on rehabilitation of scheduled castes, scheduled tribes and backward classes are considered as non-common expenditures. Accordingly, these are excluded from the present analysis.

Given the differences in the natures of the activities for which a State is obliged to incur expenditure, the use of aggregate expenditure may conceal information relating to the kinds of services provided by different States. This can be corrected through a disaggregative analysis. A priori the public expenditure of a State can broadly be classified into categories, namely, the

expenditures incurred for the purposes of either creation of a physical asset or development of human capital and those incurred for the maintenance of law and order, general administration and the like. The former is called development expenditure and the latter is called non-development expenditure. On examining the nature of the heads included under these two broad groups, it is found that the head representing the loans that State governments had given to individuals and institutions can also be classified as development expenditure.

Again to facilitate meaningful inter-regional comparisons, in keeping view of the fact that the population sizes of the States very substantially, the individual States expenditures are initially scaled down to per capita terms.

Since the interest of this analysis lies more in the end result of the development strategy that has been adopted over the years and not on the year-to-year variations, a cross-sectional analysis is considered more relevant. However, as the emphasis placed by the fifth Five-Year Plan on different aspects of planning differ substantially, an examination of the impacts of each one of the individual plans would be of considerable interest. Accordingly, the behaviours indicated by the fiscal years that represent the beginning of the planning era namely, 1951-52 and those which may be conceived as the end products of the fifth Five-Year Plans, namely, 1956-57, 1961-62, 1966-67, 1974-75 and 1979-80 are identified as the relevant data points for the present study. However, on examining the data sources and the relative emphasis that the plans had placed on the question of regional disparities the fiscal years representing the planning era and the end product of First

Five-Year Plan, namely, 1951-52 and 1956-57, are dropped for the purposes of the present analysis. A closer reading of the plan documents makes clear that though the issue of regional imbalances relating to social services did figure in the discussions of the First and the Second Plans, it has received little weight - the emphasis on the creation of a base that facilitate rapid growth and its long-run sustenance. For the first time it is in the Third Plan an explicit statement relating to balanced development can be located. Accordingly, for the purposes of examining the issues relating to regional planning, fiscal year 1961-62 can be conceived as the reference period. Further, the use of either 1951-52 or 1956-57 as the base for analysis relating to inter-state variations necessitates some ad hoc adjustments of the data, because of the re-organisations that had taken place in regard of the major States. No doubt, the division of erstwhile Punjab State into present Punjab and Haryana also necessitates some adjustments. To gain degrees of freedom, instead of going for any specific kind of adjustment the fiscal year 1966-67 is substituted with the fiscal year 1967-68.

A variety of measures can be used for gauging the inter-state disparities observed at a given point of time. A comparative analysis of these provides an idea about the change as well as the nature of the change occurred over time. Of the alternative measures, on examining their respective data requirements and limitations, the coefficient of variation is considered adequate for the purposes of the present analysis.[3]

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[3] For a detailed discussion on these alternatives See Cowell, F.A., Measuring Inequality, Oxford: Phillip Allan Publishers, 1977.

The relationship between the rates of changes occurred over time scale and the levels that the States had achieved in the base period of a given set of changes is measured in terms of rank correlation coefficients. For obvious reasons, in this exercise, the change that has taken place between 1961-62 to 1966-67 is not examined.

The identification of the factors which may be considered as responsible for an observed change in disparities is approached through the postulation of a set of linear regressions. The selection of the explanatory set is attempted through the use of hypothesis that has been advocated and tested in the contexts of other economies. Given specific purpose of this study, this selection is restricted to a limited set of factors.

The expenditure data are collected from different issues of the Reserve Bank of India Monthly Bulletin. The population estimates are collected from the Census documents. The population estimates of non-census years are arrived through the use of appropriate interpolation method. The other requisite data are taken from the Statistical Abstracts of Individual States.

3. Trends in Per Capita Expenditure Levels

The aggregate per capita expenditure levels that the fifteen States had experienced during the four reference years are presented in Table 1. An examination of this data discloses that across years the per capita levels experienced by different States vary significantly. At the beginning of the Third Plan period the per capita expenditure was highest in the erstwhile Punjab at Rs.58.47, followed by Assam (Rs.57.16), Maharashtra (Rs.53.05), Karnataka

(Rs.52.79) and Rajasthan (Rs.52.42). It was the lowest at Rs.27.84 in Bihar and was at Rs.27.97 for Uttar Pradesh. In the fiscal year (9167-68, the highest was of Punjab at Rs.123.31 and the lowest position was taken by Andhra Pradesh with Rs.50.88. Though in ranking terms, the position of Bihar has improved, its per capita level was not very much different from that of Andhra Pradesh. At the beginning of the Fifth Plan also the maximum per capita expenditure was of Punjab at Rs.230.34, the lowest was of Bihar at Rs.81.98, the levels of Andhra Pradesh as well as Uttar Pradesh were improved considerably when compared to that of Bihar. In the terminal year of the Fifth Plan too the maximum was of Punjab at Rs.433.24 and the lowest was of Bihar at Rs.147.39.

A comparative analysis of the rates of growth indicated by different States on the time scale discloses that the rates differ substantially across the States as well as across years for a given State. While in the period running from 1967-68 to 1974-75, Andhra Pradesh, Gujarat and Maharashtra had more than 125 per cent increase each, the rates of increases observed by Assam and Madhya Pradesh were in the neighbourhoods of 30 per cent each. Across the States, the rates of increases indicated by the Fifth Plan period do not differ that significantly. While Andhra Pradesh, Madhya Pradesh, Rajasthan and West Bengal report highest increases, the level being more than 110 points increase, the lowest rates of increases were in the neighbourhood of 75 per cent, indicated by Kerala and Uttar Pradesh.

As has been noted earlier, aggregate expenditure incurred by a State can initially be divided into two broad categories: namely, development and non-development expenditures. What would such a

Table 1 : Trends in Aggregate Per Capita Expenditure Levels

(in Rs.)

State	1961-62	1967-68	1974-75	1979-80
Andhra Pradesh	45.00	50.88	117.16	250.70
Assam	57.16	94.43	124.82	240.33
Bihar	27.84	52.44	81.98	147.39
Gujarat	46.00	68.60	168.39	323.00
Haryana	-	89.47	221.14	413.83
Karnataka	52.79	79.67	153.26	293.78
Kerala	48.15	88.44	159.44	278.84
Madhya Pradesh	28.56	86.52	113.39	235.69
Maharashtra	53.05	80.79	190.79	372.74
Orissa	43.10	62.79	119.88	234.74
Punjab	59.47	123.31	230.34	433.24
Rajasthan	52.42	77.00	136.75	295.02
Tamil Nadu	45.57	83.89	138.58	258.64
Uttar Pradesh	27.97	57.60	114.98	201.83
West Bengal	40.29	59.99	117.16	245.37

disaggregation indicate for the period under study? Table 2 presents these details. A glance at this discloses that in all the years more than two-fifths share of aggregate expenditure has gone to development category. This proportion, on an average, has increased from 66.52 per cent in 1961-62 to 74.36 per cent in 1979-80. Over the years, the difference in the percentage share that development group had in the overall expenditure had narrowed substantially. Whereas in 1961-62 the proportion was lowest at 44 per cent in Rajasthan, and the maximum at 89 per cent in the earstwhile Punjab, in 1967-68 the lowest proportion was at 47 per cent in Maharashtra and the highest was at 66 per cent in Punjab, Kerala and Karnataka. Against these, in 1974-75, the lowest proportion was at 65 per cent in West Bengal and the highest was at 74 per cent in Gujarat. In 1979-80 the lowest proportion continued at 65 per cent and the highest has gone up to 80 per cent in Haryana. It is also to be observed that in 1979-80, it was only West Bengal that has indicated 65 per cent share. If this is considered as an extreme case, the lowest proportion of development expenditure indicated for 1979-80 works to be in the order of 72 per cent.

As is the case of aggregate expenditure levels, the per capita development expenditure levels of different States also vary considerably. While at the beginning of the Third Plan period the per capita level was highest in the erstwhile Punjab at Rs.52.06 and was lowest in Uttar Pradesh at Rs.16.59; in the then followed years too Punjab retained its prime position with Rs.82.32, Rs.164.84 and Rs.337.90 as its per capita levels, on the other hand. Bihar assumed the lowest per capita levels in all the three years, the levels being Rs.32.19, Rs.55.61 and Rs.111.25, respectively.

Table 2

Trends in Per Capita Expenditure on Development and Non-Development Heads

(Rs.)

State	Development				Non-Development			
	1961-62	1967-68	1974-75	1979-80	1961-62	1967-68	1974-75	1979-80
Andhra Pradesh	28.46	30.29	83.44	184.15	16.54	20.59	33.72	66.55
Assam	33.42	53.90	83.45	180.69	23.74	40.53	41.37	59.64
Bihar	19.35	32.19	55.61	111.25	8.49	20.25	26.37	36.14
Gujarat	30.24	35.81	123.93	247.12	15.76	32.79	44.46	75.88
Haryana	-	55.96	158.13	332.34	-	33.51	63.01	81.49
Karnataka	35.76	52.94	105.14	211.08	17.03	26.73	48.12	82.70
Kerala	33.00	58.38	112.05	209.24	15.15	30.06	47.39	69.60
Madhya Pradesh	20.43	52.83	83.23	183.23	8.13	33.69	30.16	52.46
Maharashtra	32.50	37.89	125.96	274.25	20.55	42.90	64.83	98.49
Orissa	28.68	37.24	81.26	173.25	14.42	25.69	38.26	61.49
Punjab	52.00	82.32	164.84	337.90	6.41	40.99	65.60	95.34
Rajasthan	28.04	41.66	92.62	202.37	24.38	35.34	44.13	92.65
Tamil Nadu	32.31	53.01	97.09	185.05	13.26	30.88	41.49	73.58
Uttar Pradesh	16.59	35.48	78.35	150.19	11.38	22.12	36.63	51.64
West Bengal	25.82	35.07	75.93	159.47	14.47	24.92	41.23	85.84

A cross comparison of the rates of increases indicated by aggregate expenditure levels vis-a-vis of those indicated by development expenditure levels discloses that the latter had assumed highest dimensions in the cases of all States for the periods running from 1967-68 to 1974-75 as well as 1974-75 to 1979-80.

Development expenditure comprises expenditures incurred on items such as education medical, public health sanitation, agriculture, animal husbandry, co-operation, irrigation, electricity works. These can broadly be divided into those aimed at the development of human capital, and those aimed at the creation and development of physical capital. The per capita expenditure levels attained by the States under these broad groups are presented in Table 3. An examination of this discloses that the levels of per capita expenditure incurred by the States under these two heads varied substantially for all the years. In 1961-62, the per capita expenditure used for human capital development was highest at Rs.14.05 in Kerala and was lowest at Rs.4.39 in Uttar Pradesh. Over the years across States, the level of per capita expenditure on this item had increased between five to nine times, the lowest being in Assam at 5.12 times and the highest at 9.07 times in Orissa. A comparison of the levels indicated by individual years indicate that in most of the States maximum increases had taken place in the period running from 1967-68 to 1974-75. While the minimum and maximum levels indicated for the year 1967-68 were in the orders of Rs.5.24 in Bihar and Rs.27.64 in Kerala, the corresponding levels in 1974-75 were in the orders of Rs.19.64 in Bihar and Rs.63.25 in Kerala. And these in 1979-80 reached the levels of Rs.36.82 and Rs.104.88, respectively.

Table - 3

Trends in Per Capita Expenditures on Human and Physical Capitals

State	Human capital				Physical capital			
	1961-62	1967-68	1974-75	1979-80	1961-62	1967-68	1974-75	1979-80
Andhra Pradesh	7.89	7.70	31.54	56.56	20.57	22.59	51.90	127.59
Assam	9.68	17.11	35.83	59.72	23.74	36.79	47.62	120.96
Bihar	4.86	5.24	19.64	36.82	14.49	26.95	35.92	74.42
Gujarat	8.23	8.24	37.18	74.15	22.01	27.57	86.75	172.97
Haryana	-	14.74	41.55	71.39	-	41.21	116.58	260.45
Karnataka	8.23	12.99	38.40	60.06	27.53	39.95	66.74	151.02
Kerala	14.05	27.64	63.25	104.88	18.96	30.74	48.81	104.37
Madhya Pradesh	6.95	18.63	30.48	48.09	13.48	34.20	52.74	135.14
Maharashtra	10.53	7.92	44.97	81.13	21.97	29.97	80.99	193.12
Orissa	5.34	8.32	27.93	53.78	23.34	28.92	53.33	119.71
Punjab	12.95	21.59	51.68	91.49	39.11	60.73	113.16	246.40
Rajasthan	8.54	15.97	39.01	67.30	19.49	25.69	53.61	135.07
Tamil Nadu	9.49	14.11	38.48	62.91	22.82	38.90	58.61	122.15
Uttar Pradesh	4.39	8.94	23.76	39.16	12.20	26.54	54.59	111.03
West Bengal	8.94	14.35	32.91	63.37	16.87	20.72	43.01	96.16

As regards physical capital, the data presented in Table 3 indicate that for 1961-62 the level attained by Punjab (Rs.39.11) was the highest and that attained by Uttar Pradesh (Rs.12.20) was the lowest. Like the expenditures used for human capital development, these expenditures too had increased substantially over the years. The rates of increases of this head vary from 410 per cent in Assam to 900 per cent in Madhya Pradesh. In 1979-80 the lowest per capita expenditure was at Rs.74.42 reported by Bihar, and the highest was at Rs.260.95 reported by Haryana. Unlike the rates of increases indicated for human capital expenditure, the rates of increases indicated for physical capital expenditure were not uniformly higher for any given period for all States. While the States of Andhra Pradesh, Assam, Bihar, Karnataka, Kerala, Madhya Pradesh, Orissa, Tamil Nadu and West Bengal report higher rates of increases for the period 1974-75 to 1979-80, the remaining indicate higher rates of increases for the period 1967-68 to 1974-75.

The divergent patterns indicated by the two categories that come under the head of development expenditure suggest that some useful insight can be gained through a further disaggregation of these two broad categories. To attempt such analysis, it is important to ensure that the individual services are uniformly defined by all the States. In the absence of such uniformity, inter-State comparisons might end up with less meaningful inferences. In view of this, given the non-accessibility to individual States' budgets, this comparison is restricted to three selected heads, namely, education, medical (inclusive of public health, and sanitation), and agriculture (inclusive of agriculture proper, animal husbandry and co-operaties). The per capita levels worked out for these three heads are presented in Table 4.

An examination of Table 4 indicates that over the years the per capita expenditures incurred by different States for education differed substantially. In the beginning of the Third Plan period, the lowest level was of the order of Rs.3.22 in Bihar and the highest level was of the order of Rs.10.89 in Kerala. All through the period that followed, the levels attained by these two States remained as the lowest and the highest. In 1979-80 the lowestwas in an order of Rs.25.57 and the highest level was in the order of Rs.77.07.

In case of medical the levels reported for 1961-62 were much lower than those reported for 1979-80. While in 1961-62 the lowest level of Rs.1.18 was indicated by Uttar Pradesh, in all the remaining years the levels indicated by Bihar were the lowest. They were in the orders of Rs.1.64, Rs.5.08 and Rs.4.25 respectively for the years 1967-68, 1974-75 and 1979-80. As far as the maximum level is concerned, it was in the order of Rs.3.17, reported by Punjab for 1961-62, Rs.7.44 reported by Rajasthan for 1967-68, Rs.17.60 reported by Kerala for 1974-75 and Rs.27.82 reported by Kerala for 1979-80.

Turning to agriculture, at the outset it may be noted that the expenditure levels indicated for the final year of the present investigation are far above the levels indicated for each one of the earlier three reference years. A comparative analyse of the levels indicated by the individual States for the four reference years individually discloses that in both the years, 1974-75 and 1979-80, the lowest and the highest levels were indicated by the same States, namely, Bihar and Maharashtra. These were in the orders of Rs.2.33 and Rs.7.32, and Rs.16.41 and Rs.38.24. In 1961-62 while the lowest level was of the order of Rs.1.21 indicated

Table - 4

Trends in Per Capita Expenditures on Education, Medical and Agriculture

State	Education				Medical				Agriculture			
	1961-62	1967-68	1974-75	1979-80	1961-62	1967-68	1974-75	1979-80	1961-62	1967-68	1974-75	1979-80
Andhra Pradesh	5.87	3.98	21.03	37.09	2.02	3.72	10.46	19.47	1.77	2.74	5.16	16.91
Assam	6.93	12.76	26.35	44.55	2.75	4.35	9.47	15.17	2.27	5.07	3.59	15.15
Bihar	3.22	2.43	14.56	25.57	1.64	1.64	5.08	11.25	2.19	3.94	2.33	7.32
Gujarat	5.99	4.17	25.24	49.32	2.00	4.07	11.93	24.83	1.98	2.08	6.89	17.35
Haryana	-	11.29	28.99	46.01	-	3.46	12.57	25.38	-	6.27	8.93	23.70
Karnataka	6.06	9.20	25.60	42.20	2.17	3.79	12.80	17.36	1.92	3.13	6.36	17.93
Kerala	10.81	21.21	45.65	77.07	3.15	6.43	17.60	27.82	1.61	4.23	4.10	22.88
Madhya Pradesh	4.57	13.68	20.52	29.05	2.38	4.95	9.96	19.04	1.29	4.44	4.37	12.50
Maharashtra	7.50	3.16	29.69	53.35	3.03	4.76	15.28	27.78	2.65	6.07	16.41	38.24
Orissa	3.31	4.71	19.91	35.01	1.53	3.61	8.02	18.76	2.09	5.26	5.63	30.69
Punjab	9.78	16.82	37.43	63.98	3.17	4.77	14.19	27.52	1.97	5.80	16.15	18.91
Rajasthan	5.70	8.53	23.80	45.98	2.84	7.44	15.21	21.33	1.55	3.75	3.18	15.16
Tamil Nadu	6.93	8.10	26.43	44.19	2.56	6.01	12.00	18.73	2.35	6.74	7.03	33.49
Uttar Pradesh	3.21	6.50	17.67	25.91	1.18	2.44	6.08	13.25	1.21	2.98	4.63	9.40
West Bengal	6.04	9.10	21.95	41.63	2.90	5.25	10.97	21.75	1.96	4.14	5.54	14.82

by Uttar Pradesh, in 1967-68 the lowest level was of the order of Rs.2.08 indicated by Gujarat. Whereas for 1961-62 the highest was of the order of Rs.2.65 indicated by Maharashtra, for 1967-68 it was of the order of Rs.6.74 indicated by Tamil Nadu.

4. Changes in Disparities

Using the differences between the lowest and highest per capita expenditure levels relating to the four reference periods that have been discussed so far, it may be inferred that over the years the disparity in the provision of public services has widened quite significantly. For instance, the series related to aggregate per capita expenditure levels suggest that the inequality has widened from 1:.1 in 1961-62, to 1:2.42 in 1967-68, 1:2.81 in 1974-75 and to 1:2.94 in 1979-80. But the use of such measure is susceptible to yield erroneous inferences, for it ignores the arrangement of the values that fall between the limits. The contrasts of the arrangements indicated by different periods do not find any place in the use of this measure. For an analysis that aims to examine the changes in the distribution of a given phenomena, knowledge of the arrangement is essential. A simple measure that can take care of this deficiency of range measure is the familiar dispersion measure, namely, the variance.[4] However, this measure for a comparative analysis of two periods, may prove unsatisfactory. This is because it being a measure dependent on the mean level, one distribution may show much greater relative variation than another and still end up having a lower variance if the mean income level around which the variation took place is smaller than with the other distribution. This deficiency can be taken

[4] For a comparative analysis of various measures of inequality refer Cowell, F.A., Measuring Inequality, London, Phillip Allan Publishers, 1977.

care through the use of a standardized variance such as Coefficient of Variation. This, being independent of the unit of measurement as well as the mean income level can be used for a cross comparison of the behaviours indicated by two or more variables also. What does the use of this measure for the data presented in the above discussed Tables indicate? To facilitate easy comparison, the mean and the coefficients of variations obtained for different aggregates that have been discussed so far are presented in Table 5.

Over the period under investigation the average per capita expenditure for all the fifteen States taken together has increased by more than five and half times, from Rs.44.81 in 1961-62 to Rs. 281.68 in 1979-80. The rates of increases observed for the three sub-periods that constitute this overall period of two decades indicate that the increases observed for individual sub-periods do not differ that significantly. While it was in the order of 84 per cent for the period 1961-62 to 1967-68 it was in the orders of 89 per cent and 94 per cent respectively for the later two periods. The standard deviation of the per capita expenditure levels attained by different States has also increased over time. But relative measure shows that there does exist a change in the pattern of the behaviour. For the period running through the years the coefficient of variation has shown a continuous upward movement till 1974-75 - it has increased by about 5 per-centage points in the Third Plan period, and by about 15 percentage points in the Fourth Plan period. Against these increases, this coefficient shows a decrease in the order of 5 per cent for the then followed period. It is true, this decrease may not be classified as a sub-

Table - 5

Means and Coefficient of Variations

Expenditure group	Means (Rs.)				Coefficient of variation %			
	1961-62	1967-68	1974-75	1979-80	1961-62	1967-68	1974-75	1979-80
Total	44.81	77.05	145.87	281.68	23.39	24.82	28.69	27.50
Development	29.76	46.33	101.40	209.44	28.86	30.02	30.33	30.46
Non-Development	15.05	30.72	44.47	72.24	34.88	27.07	26.00	27.90
Human Capital	8.55	13.57	37.11	64.72	32.51	45.03	29.21	28.26
Physical Capital	21.21	32.76	64.29	144.72	31.78	30.37	37.95	40.69
Education	6.18	9.04	24.53	44.12	35.92	62.27	30.40	31.18
Medical	2.37	4.53	12.58	20.60	26.89	33.48	30.15	25.31
Agriculture	1.92	4.44	6.69	19.63	20.83	31.53	63.38	44.63

stantial reduction. When compared to the magnitudes that the measure has attained in 1961-62 and 1967-68, the 27.50 size indicated for 1979-80 causes some concern. But, if the pattern is to be taken as the guiding norm, the reversal in the direction of the disparity index may be taken an indication of the initiation of the envisaged convergence in disparities relating to public services. It may be recalled that as far as disparities relating to public services are concerned, the Draft Fifth Plan acknowledged the non-accomplishment of any break-through in the plans that had adopted till then; and it was in that perspective the Fifth Plan explicitly stated that one of its prime objectives is to make a frontal attack on the problem of regional disparities in public services "by attempting to allocate adequate resources for social consumption for all areas - irrespective of the resource constraints of individual States".[5]

Is this reduction observable across all categories or major heads of public services? Some insight into this can be obtained by analysing the behaviours of each of the heads that had figured in the earlier section. As far as the division is confined to the two broad categories, namely, developmental and non-developmental groups, it may be noted that over the years the rates of increase indicated by the mean levels of the two groups differ substantially. Whereas the mean level of the development category has increased by more than 600 percentage points, from Rs.29.76 in 1961-62 to Rs. 209.44 in 1979-80, the corresponding increase in the case of non-development group was in the order of 380 percentage points only- from Rs.15.05 to Rs.72.23. Similarly, the rates of increase for

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[5]Planning Commission, Draft Fifth Five-Year Plan 1974-75, New Delhi, Government of India, 1974, p.87.

the three sub-periods also differ substantial - while in the case of development category they were in the orders of 55 per cent, 118 per cent and 106 per cent respectively, in case of non-development category they were in the orders of 105 per cent, 55 per cent and 63 per cent. This increased dominance of the development category suggests that the overall behaviour of the State expenditures would run parallel to the behaviour indicated by the development group in particular.

Over the years the disparity index relating to development expenditure group has not increased that substantially - it was in the order of just 5 per cent only. The time profile of this increase indeed discloses that much of the increase has taken place in the Third Plan period. During Fourth Plan period it has increased by just one per cent and during the Fifth Plan period it has remained at the level indicated by the Fourth Plan period. Turning to the non-development group, it may be noted that over the years the disparity index has gone down by more that 30 percentage points, from 34.88 per cent in 1961-62 it has come down to 23.90 per cent in 1979-80. This decline has not come through a smooth and un-directional pattern, however. While in the Third Plan period it has shown a decline in the order of 28 percentage points, in Fourth Plan period it has reversed its behaviour leading to a marginal 4 per cent increase. Thus, it may be inferred that the period that has proclaimed war against regional disparities in public services, while the growth in the disparity index related to development group was arrested, the index relating to non-development group was reduced considerably.

What does the behaviour suggested by the sub-groups belonging to development heads indicate? Confining to the broad groups belonging to developmental category, it may be noted that over the years the average per capita expenditure incurred for the purposes of the development of human capital has increased by seven and half times. Against this, the average per capita expenditure incurred for the purposes of the development of physical assets indicates less than six-fold increase. Across the three sub-periods the rate of growth indicated by the two heads differ substantially. This is particularly true for the periods that correspond to the Fourth and the Fifth Plan periods. As far as the Third Plan period is concerned, the average expenditures of both these groups had registered about 55 per cent increase each. In the Fourth Plan period while average related to human capital has gone up by 174 per cent, the average assigned for physical asset creation has increased by 96 per cent only. During the Fifth Plan period the average related to physical asset creation has gone up by a higher rate - while it has registered an increase in the order of 125 per cent, the average related to human capital has increased by 74 per cent only. Lines 4 and 5 of Table 5 /gives an idea about the time profiles of the disparity indices related to these two groups. These indicate that during the Third Plan period while the index related to human capital has gone up by about 40 percentage points, the one related to physical capital showed a marginal 5 per cent decline. When compared to the levels attained by these two at the end of the Third Plan period, in the then followed period human capital disparity index has come down significantly and the one related to physical capital has increased substantially. Further it may be observed that it was during the Fourth Plan period maximum reduction/increase in the two heads had taken place.

Turning to individual heads belonging to human and physical capital heads the data show that the average per capita expenditures under different heads do not indicate similar behaviours. Over the period, while the average per capita expenditure on education has increased by seven times, the average related to medical care has gone up by more than five times. The average level related to agriculture and allied activities too indicate a nine-fold increase, from Rs.1.92 level indicated for 1961-62, this average level has gone up to Rs.19.63 in 1979-80. Across the sub-periods the rates of increase indicated by these three groups differ significantly. While in the cases of education and medical the period running from 1967-68 to 1974-75 indicate maximum increases, in case of agriculture the maximum rise is observed by the period running from 1974-75 to 1979-80. Turning to inter-State variations, the time profile indicated by the disparity index related to education runs parallel to the pattern indicated by human capital disparity index. The index has shown a sizeable (58 per cent) increase in the period running from 1961-62 to 1979-80. When compared to the magnitude that the index has assumed in regard to education, the index pertaining to medical had assumed smaller dimension althrpugh the period. By and large, this smaller dimensionality of the medical disparity index holds good for the rates of increases also. The 58 per cent incrcase in education disparity index had accompanied with a 11 per cent increase in medical disparity index. Similarly, the 64 per cent reduction in education disparity coeffieient has accompanied with a marginal 7 per cent reduction in medical disparity index. But the 16 per cent reduction in the medical disparity coefficient indicated for 1974-75 to 1979-80 has accompanied by a

marginal 3 per cent increase in the education disparity index. Following this it may be inferred that while in the pre 1974-75 period the efforts were directed more towards the reduction of disparities related to education, in post 1974-75 period higher efforts were directed towards the reduction of disparities related to medical services. It may, however, be noted that in absolute terms the per capita expenditure incurred on medical services were always lower when compared to those related to education. In 1979-80 while the maximum amount spent for education was in the neighbourhood of Rs.77.07, for medical services it was in the neighbourd of Rs.27.82 only.

The time profile indicated by the index related to agricultural services deviate from the profile indicated by aggregate physical services quite significantly (See line 8, Table 5) whereas the aggregate index shows a near static position for 1961-62 to 1967-68, agricultural index indicates more than 50 per cent raise in inter-State disparity. Similarly for the period 1967-68 to 1974-75 against the 25 per cent raise indicated by aggregate index, the agricultural index indicates more than 100 per cent raise. So far as the last perio is concerned while the aggregate index shows a marginal (7 per cent) increase, the agricultural index indicates 30 per cent reduction. It may, however, be observed that across individual heads that have been taken up for investigation, the disparity index related to agriculture has assumed much higher dimensions in both 1974-75 as well as 1979-80.

5. Relationship Base Levels and Changes in Rates of Growth

A reduction in disparity might take place either through a reduction in the rates of growth of the States that had experienced higher levels of expenditures in base periods or through an acceleration in the rates of growth of the States that had experienced lower levels of expenditures in the base periods. Evidently the development strategy of the Indian economy does not purport a reduction in levels experienced by any given region, but aims at improving the rates of growth of the States that had been observed to have experienced lower levels at a given point of time. Hence a comparative analysis of the rates of growth experienced by different States would be of considerable interest. However, such an examination does not facilitate to quantify the relationship between the rates of growth and base levels. An idea about this relationship can be formed through the use of rank correlation. Ranking the States according to the per capita expenditure levels experienced in 1967-68 and also according to the increments in levels over the period running from 1967-68, the rank correlation between the two sets of rank can be arrived. Similarly, the rank correlation between the ranks attained by different States on the basis of the per capita expenditure levels they attained in 1974-75 and the increments observed during the period 1974-75 to 1979-80 can be arrived. The magnitudes and the signs of the coefficients thus arrived can be used to form an idea about the process through which the reduction/increase in disparity has been achieved. If the reduction in the disparity has proceeded on the desired lines, these correlation coefficients should exhibit negative signs and also turn out with statistically significant dimensions.

Table - 6

Per Cent Rates of Increases of 1974-75 Over 1967-68

State	Total expen-diture	Develop-ment expendi-ture	Non-deve-lopment expendi-ture	Human capi-tal	Physi-cal capi-tal	Educa-tion	Medi-cal care	Agricul-ture and allied Act
1	2	3	4	5	6	7	8	9
Andhra Pradesh	130	175	64	310	130	430	181	88
Assam	32	55	2	110	129	107	118	-29
Bihar	56	75	30	275	133	499	210	-41
Gujarat	145	246	36	351	215	505	193	231
Haryana	147	183	88	182	183	157	263	43
Karnataka	92	99	80	196	67	178	238	103
Kerala	80	92	58	129	59	115	174	-3
Madhya Pradesh	31	58	90	64	54	50	101	-2
Maharashtra	136	232	51	468	170	840	121	170
Orissa	90	118	49	235	84	323	122	7
Punjab	87	100	60	140	86	123	197	178
Rajasthan	78	122	25	144	109	179	104	-15
Tamil Nadu	65	83	34	173	151	127	100	4
Uttar Pradesh	100	121	66	165	106	172	149	55
West Bengal	95	217	65	229	108	141	109	34
Correlation Coefficient	-0.25	-0.15	-0.17	-0.85	-0.36	-0.91	-0.57	0.17

The per cent rates of increases observed by different States during the period 1967-68 to 1974-75 and the correlation coefficients between the rankings obtained by different States on the basis of these rates and the rankings assigned on the basis of the per capita levels observed in the fiscal year 1967-68 are presented in Table 6. An examination of these data discloses that in the cases of all expenditure heads, exception being the case of agriculture, the correlation coefficients had assumed negative signs. These suggest that the States which had experienced relatively lower ranks in 1967-68had experienced comparatively higher rates of increases in the period running from 1967-68 to 1974-75. Subjection of these observed rank correlation coefficients to statistical significance tests, however, discloses that of the eight correlation coefficients only three, namely, the coefficients related to human capital, education and medical, are significant at the 5 per cent significance level. It may be recalled that it was only in these cases the disparity index has registered sizeable reductions in that period. The observed increase can be classified as of insignificant order. In the case of physical assets through the correlation coefficient has turned out with a dimension it is significant at 10 per cent significance level. The disparity index has shown an increase mainly because of the substantially different per capita levels that the States of Punjab, Haryana, Gujarat and Maharashtra had assumed in the fiscal year 1974-75. The positive sign assumed by agriculture head indicates that only the States which had attained higher per capita expenditure levels in 1967-68 had experienced higher rates of increases in the period running from 1967-68 to 1974-75, causing the disparity between the States to widen further. This and the negative rates of increases indicated by the States like Assam, Bihar, Madhya Pradesh and Rajasthan which

had low per capita expenditure levels in 1967-68 explain the perceptible increase in the inter-State disparity coefficient indicated by the fiscal year 1974-75.

The insignificant nature of the coefficient related to aggregated expenditure and of those related to development and non-development categories corroborate with the time profiles indicated by their respective disparity indices. The increase in the disparity index related to aggregate expenditure and the negative sign obtained for its rank correlation coefficient suggests that though the rates of increases experienced by States which had lower per capita levels are higher than those indicated by States which had higher per capita levels, the gap between the levels of the two groups too widened.

The rates of increase indicated by different States during the period 1974-75 to 1979-80 and the correlation coefficients obtained for the ranking of these rates and the ranking obtained on the basis of the per capita levels on 1974-75 are presented in Table 7. Of the eight correlation coefficients presented herein, seven had negative signs. Of the seven coefficients which have negative sign, two, namely, those related to medical and agriculture are significant at 5 per cent level. These corroborate with the earlier drawn inference that the inter-State disparity in these two items was reduced considerably during the period running from 1974-75 to 1979-80. The correlation coefficient related to education have had negative sign but the coefficient is in the close neighbourhood of zero. This explains the marginal increase in the disparity coefficient. A cross comparison of the rates of increases observed for this head also indicates that the rates of increases witnessed by comparatively lower per capita States like Bihar, Uttar Pradesh and Rajasthan do not differ perceptibly from the rates

Table - 7

Per Cent Rates of Increase of 1979-80 Over 1974-75

State	Total expen-diture	Develop-ment expendi-ture	Non-deve-lopment expendi-ture	Human Capi-tal	Physi-cal capi-tal	Educa-tion	Medi-cal	Agricul-ture and allied Act
1	2	3	4	5	6	7	8	9
Andhra Pradesh	114	121	97	79	145	77	86	228
Assam	93	117	44	67	154	69	60	322
Bihar	80	100	37	87	106	75	121	214
Gujarat	92	99	71	99	99	95	108	152
Haryana	87	111	29	72	124	59	102	164
Karnataka	91	101	72	56	126	65	39	182
Kerala	75	87	47	66	113	68	59	458
Madhya Pradesh	108	120	74	58	156	42	91	186
Maharashtra	95	118	52	80	138	80	82	133
Orissa	96	114	61	93	124	76	134	473
Punjab	88	105	45	77	118	71	94	17
Rajasthan	116	118	110	73	152	23	40	77
Tamil Nadu	87	191	77	63	108	67	56	76
Uttar Pradesh	76	192	41	65	103	47	118	103
West Bengal	110	110	108	92	123	90	98	168
Correlation Coefficient	-0.13	-0.09	-0.14	-0.17	0.20	-0.05	-0.78	-0.68

witnessed by States (such as Kerala, Punjab and Maharashtra) which had comparatively higher levels of per capita expenditures in 1974-75. Turning to the two broad heads belonging to development category, namely, human capital and physical capital, the positive sign attained by the correlation coefficient related to physical capital suggests that the States which had experienced lower per capita levels in 1974-75 had not accelerated their rates of increases, causing an increase in the divergence between the per capita levels. The correlation coefficient related to human capital does show a negative sign, but magnitude-wise the coefficient is not statistically significant. Given the behaviour indicated by the major component of this head, namely, education this is not un-understandable. Similarly, the insignificant nature indicated by the development head explains the static behaviour indicated by its disparity index. Finally, the insignificant nature of the correlation coefficient and the decline in the disparity index related to aggregate expenditure may be explained in terms of the higher weightage that has been given to expenditures meant for the development of physical capital.

6. Determinants of Expenditure Variations

An obvious issue that need to be examined in this context is: can the differences in the expenditure levels observed by different expenditure category be explained adequately by a set of quantifiable factors? An answer to this can be sought through the use of multiple regression analysis, based on a priori theoretical and on acknowledged empirical findings. A set of variables can initially be identified as possible explanatory variables for the observed variations; and the significance of each one of the identified factors be approached through conventional statistical tests of

significance. Given the limited size of the data points this selection of explanatory variables in the present analysis needs to be restricted to a small number. The use of the same set of explanatory variables for all categories of public services can be questioned. However, for obvious reasons, this identification of individual factors for each functional category is kept outside the domain of the present only.

Following the publication of the poineering work of Fabricant, a substantial body of empirical economic literature has been developed on the positive study of government expenditure at the regional governmental level. While majority of these were conducted for the variations observed by the constituent States of the USA and some attempts were made with respect to Canadian situation also.[6] In the Indian context the only study worth mentioning that of Reddy.[7] A review of these studies discloses that by and large three variables, namely, per capita income, population density and urbanisation, are identified as the main contenders. These variables have reappeared in one form or another in almost every determinant study. In majority of these studies only per capita income has turned out as significant at convention levels of significance. The interpretation that can be assigned to this variable is not unambiguous; it can be interpreted both as a supply factor as well as a demand factor. Acknowledging the fact that the above mentioned three variables often fail to provide

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[6]For a concise review of three works refer Bahl, R.W., and Saunders, R.J., "Fabricant's Determinants After Twenty Years", American Economist, Spring, 1966.

[7]Reddy, K.N., op.cit.

adequate explanation of the variations, some recent studies experimented with a number of additional variables and based on the results came to the conclusion that inclusion of variables representing inter-government financial transfers and market loans would facilitate higher explanations.[8] In majority these new variables are found to have most significant influences. But the manner in which these variable are integrated into the system appears ad hoc. The question to be examined is: if none of the Fabricants trioca can be assigned with unambiguous uni-directional causal influences, why should they be included along with a variable such as federal transfers whose influence can be postulated unambiguously?

A priori the quantum of expenditure observed to have been incurred by a State can be identified as a net resultant of both supply and demand factors. Demand for public services would be a direct proportional function of population. The structure of population would also be identified as another demand factor. The latter however can be assumed to show close correlation with population size. Turning to supply factors, they can be equated with the possible sources of finances that a State can employ. Given the complex network of inter-governmental fiscal relationships characterising the public finances of the Indian States, the tax receipts that a State raises on the basis of its own efforts and the receipts a State gets from the Union under the heads of shared taxes and duties, loans, and grants can initially be identified as the primary sources. In addition, to meet the supply targets

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[8] a) Sacks, S., and Harris, R., "The Determinants of State and Local Government Expenditures and Inter-Governmental Flows of Funds", National Tax Journal, March, 1964.

b) Bahl.

a State can raise funds in the form of market loans from different institutional agencies. Thus, if E_{it}, P_{it}, F_{it} and L_{it} represents the expenditure level, population size, own tax receipts, Union transfers, and loans raised from market respectively of State i in period t, E_{it} can be visualized as a proportional function of all these four variables. If the influences of these can be populated to take linear additive forms, the relationship can be specified as:

$$E_{it} = a_o P_{it} + a_1 T_{it} + a_2 F_{it} + a_3 L_{it} + u_{it} \quad \ldots (1)$$

where u_{it} is a random error terms, representing the influence of other minor and random forces. A priori all a's can be hypothesized to have positive signs. Then, division of (1) throughout with population yields the relationship as:

$$\frac{E_{it}}{P_{it}} \equiv a_o + a_1 \frac{T_{it}}{P_{it}} + a_2 \frac{F_{it}}{P_{it}} + a_3 \frac{L_{it}}{P_{it}} + v_{it} \quad \ldots (2)$$

An obvious advantage of this kind of specification is that it would facilitate pin-pointing the contributions of different of sources of finances and thereby prove useful for many of the policy purposes.

The OLS estimates obtained on the basis of above specification for the four reference years are presented in Tables 8 to 11. It can be seen that this exercise is restricted to major categories of the expenditures. The individual heads, namely, education, medical and agriculture are excluded from this mainly in view of the fact that neither the provision of Union transfers nor the the supply of market loans does a priori ensure the purpose for which the raised funds are being used. It is true that this assumption does not hold good for all categories of loans and

and grants that constitute the Union transfers, but such tied funds constitute a minor proportion of the aggregate transfers.

It is well known that the realiability of a set of regression estimates can be ensured if and only if the data conform the a priori assumptions made with respect to the behaviour of the random error term and the correlation between the chosen explanatory variables. By and large the two specific properties that need to be examined are the auto-correlation nature of the error term and the multi-collinearity of the explanatory set. In the present exercise, given the cross-sectional nature of the data the former issue may ignored - auto-correlation is generally visualized as a time series problem. So far as multicollinearity problem is concerned, a fairly good idea can be formed on the basis of a comparative analysis involving zero-order correlations of the explanatory variables and the multiple R^2 of the estimated relationship. Such an examination applied to the data used herein indicate that zero-order correlations of the variables do not, in general, assume dimensions greater than the R^2 attained by the regression relationship. This ensures that the obtained estimates need not be suscepted for their realibilities.

Based on the dimensions of the R^2 reported in Table 8 to 11, it may be inferred that the chosen explanatory set is able to account for fairly large variations indicated by the five expenditure groups that have been taken up for investigation. The exception to this generalisation, however, are the relationships obtained for human capital expenditure for the year 1967-68, and the one pertaining to physical capital expenditure for the year 1961-62.

Table 8

OLS Estimates of Equation(2):1961-62*

Expenditure group	Intercept	Own taxes	Union transfers	Market loans	$\bar{R}^2$	DW
1. Total expenditure	15.9572	0.9288 (1.69881)	0.6340 (1.9121)	1.0479 (1.2469)	0.7283	1.82
2. Development	16.8274	0.6677 (1.9798)	0.2004 (2.0010)	0.3546 (1.0841)	0.3853	1.87
3. Non-development	0.8702	0.4611 (1.8182)	0.6344 (3.2777)	-0.8765 (0.1787)	0.6609	1.94
4. Human capital	0.5723	0.5987 (3.2634)	0.1076 (1.9667)	-2.8076 (0.9954)	0.5724	1.73
5. Physical capital	16.2577	0.6900 (1.1275)	0.1082 (0.3296)	1.1637 (1.7020)	0.3659	1.88

Note: *Figures in brackets are ratios.

Table 9 : OLS Estimates of Equation (2) : 1967-68

Expenditure Group	Intercept	Own taxes	Union transfers	Market loans	$\bar{R}^2$	DW
Total expenditure	12.9572	1.6701 (3.2111)	0.6416 (2.3305)	0.2011 (1.0599)	0.6200	1.68
Development	7.2782	0.8837 (2.0954)	0.4144 (1.8564)	1.9329 (1.7096)	0.5408	1.82
Non-Development	5.2162	0.7864 (3.7374)	0.2272 (2.0398)	-2.1339 (1.4703)	0.5892	1.65
Human capital	0.6280	0.3766 (1.5904)	0.1512 (1.2080)	-0.6256 (0.4096)	0.2505	1.54
Physical capital	7.9062	0.5076 (1.7460)	0.2632 (1.7103)	2.5584 (1.3626)	0.5734	1.84

Note: *Figures in brackets are t-ratios.

Table 10 : OLS Estimates of Equation (2) : 1974-75

Expenditure Group	Intercept	Own taxes	Union transfers	Market Loans	R^2	DW
Total expenditure	24.7902	1.3900 (5.7529)	0.5900 (1.9663)	1.7129 (1.5938)	0.9105	1.9
Development	19.2341	0.9289 (5.4405)	0.3318 (1.5648)	1.7300 (2.2781)	0.9175	1.8
Non-development	5.5551	0.4630 (4.6029)	0.2570 (2.0578)	-0.0227 (0.0498)	0.8099	1.6
Human capital	5.4069	0.4667 (3.7087)	0.4161 (2.6625)	-0.6987 (1.2304)	0.6375	1.5
Physical capital						

Note: *Figures in brackets are t-ratios.

Table 11 : OLS Estimates of Equation (2) : 1979-80

Expenditure Group	Intercept	Own taxes	Union transfers	Market loans	$\bar{R}^2$	DW
Total expenditure	38.6759	1.4649 (6.7095)	1.3276 (3.2752)	1.8436 (1.8556)	0.9341	1.87
Development	15.8222	1.0341 (4.8539)	0.8424 (4.8539)	2.5414 (1.9153)	0.9075	1.72
Non-development	22.8549	0.4308 (4.1736)	0.4853 (2.5325)	-0.6976 (1.0850)	0.7230	1.63
Human capital	21.7023	0.2881 (2.1804)	0.4155 (1.7416)	0.7772 (1.8950)	0.5689	1.76
Physical capital	37.7875	0.7460 (2.8705)	0.7292 (1.5114)	2.4644 (1.7224)	0.8003	1.83

Note: *Figures in brackets are t-ratios.

As has been noted earlier, a priori all the coefficient estimates of the relationship are expected to exhibit positive inferences. An examination of the signs attained by different coefficients reported herein discloses that in almost all cases this a priori conjecture does hold good. The exceptions are the coefficients obtained for market loans in the relationships pertaining to human capital and non-development expenditure groups for the year 1961-62 to 1967-68.

Turning to statistical significances of individual regression coefficients the t- ratios given along with the estimates of individual coefficients disclose that for all the four years the estimates reported for own taxes are significant for all categories of expenditures. Similarly, exception being the estimate obtained for human capital expenditure pertaining to fiscal year 1967-68, and the one obtained for physical capital expenditure relating to the fiscal year 1961-62, for all expenditure to Union transfers had assumed statistically significant dimensions. Some may not be classified as significant at 5 per cent level, but all, exceptions being the two estimates mentioned above are significant at 10 per cent level. So far as the estimates relating to market loans coefficients are concerned none of the negative estimates is significance level. Of the positive estimates, the estimates are not significant in only three cases, namely, those related to total expenditure for the fiscal years 1961-62 and 1967-68 and the one related to non-development expenditure for the year 1974-75.

The interest of the present study does not lie in the statistical significance of individual coefficients, but in the relative weights that the variables in question have been exerting on the

different expenditure categories. An idea about these can not be attained by a visual inspection of the coefficient estimates given in above mentioned four Tables. Estimates that facilitate such an examination can be arrived from the reported coefficient estimates by resorting to a conversion of these estimates into what are known as "beta coefficients".[9] Such estimates obtained for the estimates that conform to the a priori conjectures of this study are presented in Table 12. An examination of this Table discloses that over the years, while the weights that own tax receipts and market loans have been placing on the expenditure levels were raising the weightage of Union transfers was declining. This behaviour is not inexplanable. Over the years, the federal transfers have become more biased towards the States with lower per capita incomes.

A closer look at the results presented in Tables 8 to 11 discloses that the significance of market loans has become more clear in the post 1967-68 period. This and the increasing weight that this variable has been indicating suggests the need for a further probe into the nature of changes that have been taking place on this account. More particularly, one would be interested in knowing the extent to which this increasing dependence on these loans can be conceived as a contributory force for the observed decline in inter-State disparities. Evidently, if these loans are to be identified as a factor responsible for the decline in the observed disparity index, the data should indicate that the States which had placed lower reliance on market loans in base years had

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[9] Goldberger, A.S., Topics in Regression Analysis, New York : Macmillan Publishing Co., 1968, pp.171-198.

Table 12 : Beta Weights of Explanatory Variables

Expenditure Category	Years	Own taxes	Union transfers	Market loans
Aggregate				
	1961-62	0.3420	0.4052	0.0308
	1967-68	0.7779	0.4526	0.0141
	1974-75	0.8536	0.2177	0.2145
	1979-80	1.4659	0.3055	0.1679
Development				
	1961-62	0.3846	0.1546	0.0426
	1967-68	0.5655	0.4017	0.1862
	1974-75	0.7774	0.1668	0.2952
	1979-80	0.8026	0.2354	0.2814
Non-development				
	1961-62	0.1840	0.7760	NC
	1967-68	0.9540	0.4175	NC
	1974-75	0.9957	0.3322	NC
	1979-80	1.1943	NC	0.2096
Human Capital				
	1961-62	0.8239	0.2570	NC
	1967-68	0.5483	0.3339	0.1373
	1974-75	1.1075	0.5933	0.3332
	1979-80	0.7798	0.1080	0.2999
Physical Capital				
	1961-62	0.3460	0.1067	0.0214
	1967-68	0.4541	0.3568	0.3447
	1974-75	0.4875	0.1534	0.5202
	1970-80	0.6974	0.2454	0.3286

Note : NC = Not calculated.

practiced higher rates of increases in the then followed periods. That is, if the States are ranked according to their per capita market loans in 1967-68 and 1974-75, as well as according to the increments they had observed over the periods 1967-68 to 1974-75 and 1974-75 to 1979-80, the correlation coefficients between the two sets of rankings should yield negative and significant coefficients. For the data under the study this seems to have been the case - while the correlation coefficient between the rankings of 1967-68 and rates of changes between 1967-68 to 1974-75 has worked out to be in the order of -0.8929, it is in the order of -0.4502 for the rankings obtained for the levels indicated for 1974-75 and the rankings obtained for the rates of increases observed for 1974-75 to 1979-80.

The question that arises in this context is: If market loan play a significant role in bringing down the inter-State disparities in public services why is the decline in the inter-State disparity index not vividly shown? This can be explained in terms of the distribution pattern of the loans. Over the years, though the States that had practiced lower levels of per capita loans show a tendency to increase their levels, the quantum of loans going to them had not increased significantly. This is quite clear from the significant and positive nature of the correlation coefficients observed between the rankings of the per capita incomes and the rankings of the shares of market loans received by different States under study - these coefficients work out to be in the orders of 0.6831, 0.4679, 0.6018 and 0.5679, respectively for fiscal years 1961-62, 1967-68, 1974-75 and 1978-79. Had this biased nature of the flow of market loans been taken care, the prevailed regional inequalities would have been corrected quite perceptibly.

7. Conclusions

In the recent years the empirical economic literature dealing with the developmental problems of Indian Economy is flooded with a number of studies, having a focus on the question of regional disparities. Surpringly, the specific dimension relating to basic needs (more commonly known as public services) has received rather limited attention. To fill in this gap an attempt is made in this study to analyse the behaviours indicated by the time structures of government expenditures undertaken by the fifteen major States that constitute the Indian Union.

The aggregate expenditu es incurred on both the revenue as well as the capital accounts are taken together to represent the levels of public services provided by the States under study. With a view to understand structural changes that have taken place, the aggregate expenditure is initially decomposed into development and non-development expenditure categories. The development expenditure category in turn is decomposed in two broad categories, namely, the expenditures used for the development of human capital. To examine the extent to which the repeated emphasis on the services such as education, medical and agriculture has been materialized, these three specific services are analysed individually.

The time structures indicated by the expenditure patterns covering the period running from 1961-62 to 1979-80 did show that over years the average per capita level of aggregate expenditure has increased by more than five and half times. There was also a shift in the pattern of expenditure, more emphasis being placed on development expenditure. The share of development expenditure has increased from about two-fifths to more than three-fourth,

Within the development expenditure group, the average per capita expenditure used for the development of human capital has increased by seven and half times, while that used for the development of physical capital has increased by six times. Between the two items that constitute the expenditure used for human capital development and relative importance of education declined in favour of medical. Against the seven fold increase observed by the average per capita expenditure on education, the average relating to medical has increased by more than nine times. In absolute terms, the average per capita expenditure used for medical was much smaller than that relating to education, however.

Across the fifteen States that have been taken up for investigation, the per capita expenditures incurred on different heads in the four sample years, namely 1961-62, 1967-68, 1974-75 and 1979-80, are observed to vary substantially. In general, althrough the period the per capita expenditure levels indicated by Bihar and Punjab were observed as the lower and the upper limits for almost all categories of expenditures. The only exception to this was the expenditure relating to education. Though for this category too the per capita level indicated by Bihar has remained as the lower limit, althrough the upper limit was given by Kerala.

The time profiles of the inter-State disparity indices related to different expenditure categories indicate:

(i) The index related to aggregate expenditure has moved up continuously in the period running up to the end of the Fourth Plan, the period covered by Fifth Plan shows a reversal in this trend - the index register about five per cent decline against the twenty per cent increase observed in the period covered by the Third and the Fourth Plans, inclusive of the three annual Plans;

(ii) The index relating to development expenditure category has not increased that substantially even for the period running from 1961-62 to 1979-80, much of the observed marginal increase has taken place in the Third Plan period - the Fifth plan period contained the growth of this index;

(iii) Over the years, the index relating to non-development expenditure has come down quite perceptibly - much of this has taken place in the periods covered by the Fourth and the Fifth Plans;

(iv) Of the two broad groups of development expenditures, while the index relating to human capital has registered a clear downward trend, the one related to physical capital shows an upward movement - the maximum increase in this regard has taken place in the Fourth Plan period;

(v) of the two disparity indices relating to human capital, in relative magnitudes, while the behaviour of the one related to education run parallel to the behaviour indicated by human capital, the index related to medical services shows the decline more vividly in the Fifth Plan period; and

(vi) Though the magnitudes the disparity index related to agriculture and allied services continued to exhibit relatively high inequalities - this index too has come down sizeably in the Fifth Plan period against the accelerated upward movement shown by the Third and the Fourth Plans periods.

The correlation analysis carried on the basis of the rankings of the levels that different States had achieved in reference years 1967-68 and 1974-75 and the rankings that they get on the basis of the rates of increases observed for the periods 1967-68 to 1974-75 and 1974-75 to 1979-80 indicate existence of negative relationships between the two sets of rankings. These indicate that the observed reductions had not taken place at the expense of the States that had exhibited higher levels in the reference years, but on the lines that may be considered desirable for the achievement of accelerated balanced growth.

With the intention of formulating an idea about the means through which an acceleration in the pace of reduction in inter-regional variations in government expenditures can be brought-in, several sets of explanatory variables were experimented. This determinants analysis disclosed that the variables representing States' own tax receipts, Union transfers and market borrowings would account for 80 to 90 per cent variation indicated for the per capita levels of government expenditures.

The time structures of the estimates of the regression coefficients and the beta weights obtained for the three explanatory factors show that over years the significance of market borrowings in particular has increased quite perceptibly. The coefficients of variations worked out for these three variables for the four years under study are presented in the following Table. An examination of these data reveals that over the years the disparity indices relating to Union transfers and market loans have moved in opposite direction, indicating that the benefits that have been accrued because of the changes brought in regard to Union transfers were counter-balanced by the increased disparity in market borrowings.

Table 13 : Coefficients of Variations of the Explanatory Variables

Year	Own tax receipts	Union Transfers	Market loans
1961-62	32.54	31.94	67.87
1967-68	36.34	36.25	60.10
1974-75	47.81	28.06	65.32
1979-80	50.15	14.79	82.97

The correlation analyse that has been conducted with respect to the behaviours indicated by market loans disclosed:

(i) the ranking that the States get on the basis of their borrowing levels in base levels are inversely related to the rankings that the States get on the basis of the rates of increments in such borrowings; and

(ii) the rankings that the States attain on the basis of their percentage shares in aggregate sums of market loans are positively related to the rankings that would be attained on the basis of the per capita income levels.

These variations in the correlation nature indicate that though the States which had experienced low levels of market borrowings show a tendency to go-in for higher levels of borrowings, presumably to meet their public services' supply targets, the distribution of market loans has not facilitated filtering of higher quantum of loans to these States. This inherent limitation of the market loans, given the resource constraints of the States explain the non-observance of a visible reduction in inter-

State disparities in government expenditures. No doubt the Union transfers had played a decisive role in bringing down the disparities. Had this been coupled with similar nature in regard to market loans the results would have been more pronounced.

Based on above findings it may be inferred that if the planning process aims at a rapid reduction in the inter-State variations in public services there exists a timely need to identify the methods through which the currently observed disparities in the distribution of market loans could be corrected. In particular, there exists an urgent necessity to make the distribution of these loans oriented more towards the less developed regions. Given the organisational structures of the agencies from which the States have been contemplating these borrowings the warranted adjustments in market borrowings are not infeasible.

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Disparities in Social Infrastructure: A Note

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In this note, an attempt is made to a) provide some insights into the trends in disparities in respect of social infrastructure, particularly education. b) to construct a composite index of educational development and c) on the basis of the index constructed with different methods, to identify distinctly advanced and less advanced states. Some observations are also made about the factors for such differential developments.

2. The trends in the development of Indian federation over the past two to three decades seem to suggest the following general features:

i) The states are likely to grow more similar in respect of the relative magnitude of financial burden and instruments of revenue mobilization, than in respect of the relative magnitudes and pattern of public expenditures. This might be due to what one may call the 'intergovernmental demonstration effect with respect to resource efforts. The institutional framework obtaining in the country leads further strength to the operation of this demonstration effect. The continuing pressures on the finances of the states, tendency towards centralization of sources of funds, (like widening of the net of additional excise duties), persistent stipulation from the Planning Commission for the states to increase ARM, mechanism of reassessment of the non-plan resources by the Finance Commissions, etc. are some of the aspects of the institutional

framework, which may be relevant in this context.

ii) Since the political pressures for the comparable service standards are not likely to keep pace with the operation of the inter-governmental demonstration effect with respect to the resource efforts and also the pressures from the institutional set up, the states have been by and large heterogenous in respect of the levels of different government services.

iii) Even in case of the total service levels (provided both by the government and other sources), the states are in general found to be more heterogenous in respect of economic infrastructure than in respect of educational services of social infrastructure.

iv) If we consider two services, education and health from social infrastructure, then it is found that the states are more heterogenous in respect of the indicators of health levels than in respect of the different indicators of education.

v) Central assistance does not seem to have emerged as a balancing factor over the past three decades. Instead of being based upon the principle of unequal treatment of unequals, the central assistance distribution seems to be based more upon the principle of equal treatment of all. The coefficient of variation of per capita central assistance is smaller than that for the indicators of economic infrastructure and social infrastructure.

vi) Do the conclusions (iii) and (v) reflect partly the elitist overtones of our socio-economic system? Thus, the fact that states are less heterogenous in respect of education infrastructure may

be read along with three other general features; viz. a) the educational level of an individual is a positive function of the socio-economic status of his family b) more educated are more mobile than the less educated. c) Mobility for the purpose of job is likely to be greater than mobility for the purpose of education. In this background, it seems to follow that the elitist pressures in each state are likely to get the provision of the facilities for education within the borders of the state itself. Since mobility for the purpose of education is likely to be higher at higher levels, the states are more heterogenous in respect of higher levels of education. This would be evident from the comparison of the coefficients of variation for the combined Index of education at different levels, worked out on the basis of different methods.

Similarly, the more advanced states are likely to continue to get large central assistance though the less advanced states may get more assistance than before.

3. An attempt was made by us to develop composite indices of educational development by using two methods: a) By considering the average of inter-correlations among different core indicators of education as the weights for the particular indicator. This method was used by the united Nation's Institute for Social Research for measuring social development and b) by using the method suggested by NS Iengar and Sudarshan in some other context. The education index is developed by considering the following as the basis: $\frac{\text{State's value of an indicator - Minimum value}}{\text{Maximum Value - Minimum Value}}$

Percentage of Plan outlay

on a particular educational level is taken as the weight.

4. For elementary education and secondary education, the composite indicators based upon the two methods are worked out. The average correlation method is used to present also the composite index of education as a whole. Even though the choice of the relevant indicators for constructing the composite indices is debatable, certain common basis emerges for classification of states as less educationally advanced, more educationally advanced and with medium level of educational development.

5. Thus, on the basis of both the methods, we get the classification given in the Appendix II.

6. In 1970-71, Maharashtra, Assam and Tamil Nadu emerged as the most advanced states in respect of elementary education, particularly, the latter two states. UP and Bihar emerged as the least developed in this respect on the basis of both the methods.

7. In 1976-77, (the latest year for which data could be collected) Maharashtra, Kerala and Jammu & Kashmir, were identified as most advanced in elementary education. A.P., Bihar and West Bengal were identified as the less advanced states in this respect.

8. In respect of secondary education, Maharashtra and Jammu & Kashmir were more advanced in 1970. In 1977, Maharashtra was the only state which was common in the list of advanced states as per the identification by two methods. Bihar was the common less advanced state in 1970, and in 1977, W. Bengal, U.P., Haryana and Bihar were the common less advanced states. In both the years under consideration, and in respect of both elementary

education and secondary education, and on the basis of both the methods of measuring educational development, Maharashtra was the most advanced state and Bihar was the least advanced state.

9. Do experiences in the two states help in understanding why education develops in the way it has? Though categorical conclusions may be difficult, the following aspects may be worth considering. Maharashtra inherited from the British one of the most developed formal educational systems. Being the industrially and economically advanced state, pressures for educational development from within the state were more distinctly felt. This was also the state where leadership induced reforms for education (like passage of compulsory primary education acts, effective positive discriminatory measures) were introduced vigorously. Maharashtra is identified as one of the revenue surplus states (on non plan account) in the country, indicating higher capacity to spend on education. The state also has the efficient administrative set up to implement the various educational measures. In contrast, Bihar does not seem to possess these favourable features. Does the above suggest that educational development is a more a dependent variable, being influenced by the economic factors? Hence, in order to reduce disparities in respect of social infrastructure, can reduction in disparities in economic level be considered as the pre-requisite?

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Table 1

Inter-State Disparities with respect to Social infrastructure: Coefficients of Variation

Health		1960	1980
1. Govt. Exp. on health per capita		355.36	78.35
2. Hospital beds per lakh people		36.41	74.64
3. Hospitals per 1000 Sq.Km.area		-	144.63
4. Index of health consciousness	)based on)Factor)analysis	69.50	-
5. " " Public Sector's role in health		284.63	-
6. " " medical facilities		21.74	-
Education			
7. Per capita exp. on education		-	37.51
8. Per pupil education exp.		-	20.92
9. Educational level (1960-61) (Factor Analysis-based)		35.89	

Table 2

Disparity Coefficients in Education

(Coefficients of Variation %)

		1970	1977
1. Primary Education	I.S. Index	28.8	30.9
	Elementary Education Combined Index	12.9	17.0
a. No. of Schools per lakh people		34.6	59.1
b. % of non single Teacher		14.0	-
c. Av. Annual Cost per pupil		36.7	43.2
d. Teacher per 1000 pupils		41.4	-
e. Enrollment ratios		23.7	24.4
	Schools with adequate accommodation	30.7	
II. Middle	Combined Index	23.7	20.2
a. Schools per lakh pupils		60.0	32.3
b. Av. Annual cost per pupil		43.0	51.0
c. Teachers per 1000 pupils		25.4	24.0
d. Enrolment ratio		31.3	38.8
III. High School	I.S. Index	40.2	35.5
	Combined Index	18.5	40.1
a. Schools per lakh people		24.6	23.9
b. Annual cost per pupil		37.0	40.7
c. Teachers per 1000 pupils		16.6	17.9
d. Enrollment ratio		28.7	36.3

...contd.

...contd.

		1970	1977
IV. College General	Combined Index	18.9	22.5
a. Colleges per 10 lakh people		30.8	53.0
b. Cost per pupils		22.6	18.8
c. Enrollment per 10 lakh people		42.7	52.0
V. Colleges - Professional	Combined Index	48.5	40.5
a. Av. Exp per pupil		49.2	51.2
b. Institutions per 10 lakh people		41.2	37.9
c. Enrollment per 100 lakh people		28.0	37.1
Literacy rate		1971	31.86
		1981	29.92

Table 3

States	I-[illegible] Index Weighted Index Elementary Education 1970-71	1976-77
(1)	(2)	(3)
A.P.	141	100
Assam	282	220
Bihar	100	129
Gujarat	234	249
Haryana	129	127
J & K	273	285
Karnataka	228	283
Kerala	281	285
M.P.	189	200
Maharashtra	306	280
Orissa	259	309
Punjab	229	249
Rajasthan	193	156
T.N.	262	239
U.P.	138	183
W.B.	171	132

Table 4

Index of High School Education

I-S Index

States	1970-71	1976-77
(1)	(2)	(3)
A.P.	238	500
Assam	425	600
Bihar	100	100
Gujarat	238	850
Haryana	325	475
J & K	463	875
Karnataka	225	575
Kerala	363	1000
M.P.	225	600
Maharashtra	550	975
Orissa	200	625
Punjab	338	925
Rajasthan	250	700
T.N.	350	800
U.P.	100	400
W.B	338	500

Table 5

Weighted Indices of Education:1971
(On the basis of Average Correlations as weights)

States	Primary Education	Middle Edn.	High Edn.	College General	College Professional
(1)	(2)	(3)	(4)	(5)	(6)
A.P.	124	126	184	149	143
Assam	150	183	159	141	121
Bihar	100	100	100	100	113
Gujarat	120	140	183	169	143
Haryana	116	149	120	135	249
J & K	141	170	183	132	273
Karnataka	133	123	143	125	100
Kerala	151	176	142	128	365
M.P.	139	162	193	136	185
Maharashtra	153	174	199	151	121
Orissa	123	252	177	161	140
Punjab	145	178	133	120	221
Rajasthan	161	209	212	214	222
T.N.	151	225	154	146	149
U.P.	106	122	155	141	430
W.B.	135	147	140	199	106

Table 6

Composite Indicators of Education: 1976-77
(Based on Average Correlations)

State	Primary	Middle	Secondary	Colleges		All Education
				General	Professional	
A.P.	100	130	195	100	185	133
Assam	158	141	153	138	202	151
Bihar	137	100	100	114	176	127
Gujarat	168	134	184	131	217	160
Haryana	140	134	119	121	221	155
J & K	175	184	163	105	242	168
Karnataka	226	115	209	164	151	132
Kerala	184	179	177	198	530	331
M.P.	170	153	440	103	186	149
Maharashtra	176	156	211	145	194	155
Orissa	161	220	214	124	173	142
Punjab	159	151	174	149	320	213
Rajasthan	139	162	258	126	254	177
T.N.	177	125	191	111	284	189
U.P.	158	137	135	207	264	192
W.B.	128	111	116	150	100	100

Table 7

Classification of States

I-S Index based ranking

Ranking as per Average Correlation based Index

Elementary Education		Primary Education		Middle	
1st Five		1st Five			
1970-71	1976-77	1971	1977	1970	1977
Maharashtra	Orissa	Rajasthan	Karnataka	Orissa	Orissa
Assam	Kerala, J&K	Maharashtra	Kerala	T.N.	J & K
Kerala	Karnataka	Kerala, T.N.	T.N.	Rajasthan	Kerala
J & K	Maharashtra	Assam	Maharashtra	Assam	Rajasthan
T.N.	Punjab, Gujarat	Punjab	J & K	Punjab	Maharashtra
2nd Five		2nd Five			
Orissa	T.N.	J & K	M.P.	Kerala	M.P.
Gujarat	Assam	M.P.	Gujarat	Maharashtra	Punjab
Punjab	M.P.	W.B.	Orissa	J & K	Assam
Karnataka	U.P.	Karnataka	Punjab	M.P.	U.P.
Rajasthan	Rajasthan	A.P.	Assam	Haryana	Haryana
3rd Six		3rd Six			
M.P.	W.B.	Orissa	U.P	W.B.	Gujarat
W.B.	Bihar	Gujarat	Haryana	Gujarat	A.P.
A.P.	Haryana	Haryana	Rajasthan	A.P.	T.N.
U.P.	A.P.	U.P.	Bihar	Karnataka	Karnataka
Haryana, Bihar		Bihar	W.B, A.P.	U.P., Bihar	W.B, Bihar

Secondary Education

1970	1977	1970	1977
1st Five			
Maharashtra*	Kerala	Rajasthan	M.P.
J & K*	Maharashtra	Maharashtra*	Rajasthan
Assam	Punjab	M.P.	Orissa
Kerala	J & K	A.P.	Maharashtra
T.N.	Gujarat	Gujarat, J&K*	Karnataka
2nd Five			
Punjab, W.B.	T.N.	Orissa	A.P.
Haryana	Rajasthan	Assam	T.N.
Rajasthan	Orissa	U.P.	Gujarat
Gujarat, A.P.	M.P., Assam	T.N.	Kerala
Karnataka*, M.P.	Karnataka	Karnataka*	Punjab
3rd Six			
Orissa	W.B, A.P.	Kerala	J & K
U.P, Bihar*	Haryana	W.B.	Assam
	U.P.	Punjab	U.P.
	Bihar	Haryana, Bihar*	Haryana, W.B., Bihar

Table 8

Disparities with respect to economic variables

1.	Villages electrified as percent of total number of villages (1981)		53.18
2.	Per capita power consumption (1981)		74.22
3.	Percentage of gross irrigated to gross cropped area.	1950	61.20
		1978	62.87
4.	Area under HYV seeds of foodgrains as % of total area under foodgrains	1976	57.79
		1980	43.13
5.	Consumption of fertilizer per hactre of cropped area (kg)	1970	72.37
		1980	79.91
6.	Road length per 100 sq km.area,	1977	75.92
7.	Motor vehicles per lakh of population	1978	60.45
8.	Bank credit per capita	1977	71.92

Disparities with respect to certain other socio-economic variables

1.	SDP per capita	1976	27.45
2.	State's share in Population	1981	61.40
3.	Poverty percentage, (1976)		68.10
4.	Per capita central assistance 1951-79		29.25
5.	Per capita plan outlay 1951-79		42.25

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REGIONAL DISPARITIES - A MEASURE AND ROLE OF POWER

B.K.Chaturvedi

Dr.B.N.Tyagi

General: 1.1 Criteria of backwardness of states differ widely. These include computation of a composite backwardness indices based on levels of industrial development[1], Computation of a Social-Economic Synthetic Index[2] and a simple measure based on per capita income. While the composite indices are indicative of existing infrastructural support and quality of life, no objective yeardstick can be laid for their selection and the weightage allocated to various factors used in the computation are debatable. In this paper we have used state per capita income as a measure of levels of economic development. Thirteen states were selected for study during the period 1960-61 to 1978-79. This selection excluded smaller states and those with predominantly hill tract. Punjab and Haryana were combined for the purpose of this study since for the initial period 1960-61 separate data for Haryana does not exist.

Trend of per capita income growth in '60-61 to '78-79:

2.1 Per capita income of these states is given in Table I.

Table - I

(1960-61 price)

S.N.	Name of State	Per capita income for the triennium ending 1962-63	Per capita income for the triennium ending 1978-79	Percentage income increase/ decrease
1	2	3	4	5
1.	Andhra Pradesh	284	329	+ 15.84
2.	Bihar	220	237	+ 7.73
3.	Gujarat	376	411	+ 9.31
4.	Karnataka	309	401	+ 29.77
5.	Kerala	258	287	+ 11.24
6.	Madhya Pradesh	251	269	+ 7.17
7.	Maharashtra	403	524	+ 30.02
8.	Orissa	226	270	+ 19.47
9.	Punjab	374	623	+ 66.58
10.	Rajasthan	265	316	+ 19.25
11.	Tamil Nadu	329	386	+ 17.32
12.	Uttar Pradesh	249	283	+ 13.65
13.	West Bengal	339	393	+ 15.93
	ALL INDIA	308	385	+ 25%
	Coefficient of variation	19.6		29.3

Note: Per capita income data taken from Bulletins of various States' Bureau of Economics and Statistics.

Both in 1960-61 and 1978-79 Gujarat, Karnataka, Maharashtra, Ranjab-Haryana, Tamil Nadu and West Bengal had per capita income higher than the All India average. In the period 1960-61 to 1978-79 Maharashtra and Punjab-

Haryana and Karnataka showed rates of growth higher than the average. Two states with the poorest rate of growth in this period were Madhya Pradesh and Bihar. Gujarat also showed a very low rate of growth. It was significant that all states with below average per capita income recorded a below average rate of growth also.

Ranking of states according to per capita income:

3.1 Ranking of states was done in ascending order of per capita income of these thirteen states. Low per capita income states of Madhya Pradesh, Bihar, Orissa and Uttar Pradesh all along occupied ranks between 9 to 13 during this period (Table II).

Table II

Ranking of the 13 Indian States in ascending order of per capita income 1960-61 to 1978-79

S.N. State	'60-'61	'61-'62	'62-'63	'63-'64	'64-'65	'67-'68	'68-'69	'69-'70	'70-'71	'71-'72	'72-'73	'73-'74	'74-'75	'75-'76	'78-'79
1. Andhra Pradesh	8	8	7	7	7	8	8	8	8	7	6	7	6	7	7
2. Bihar	13	13	12	13	13	13	13	13	13	13	13	13	13	13	13
3. Gujarat	4	2	2	2	1	3	4	4	2	3	6	3	6	3	3
4. Karnataka	6	6	5	6	6	6	5	5	5	5	5	4	3	4	4
5. Kerala	10	9	8	10	12	9	7	7	9	8	7	9	8	9	11
6. Madhya Pradesh	9	11	10	11	11	10	11	12	12	10	11	10	10	10	12
7. Maharashtra	1	1	1	1	3	2	2	2	3	2	2	2	2	2	2
8. Orissa	12	12	11	9	9	11	9	11	11	12	12	11	11	11	10
9. Punjab	3	3	3	3	2	1	1	1	1	1	1	1	1	1	1
10. Rajasthan	7	7	13	8	8	7	10	9	6	9	9	8	9	8	8
11. Tamil Nadu	5	4	4	4	4	5	6	6	7	6	4	5	7	6	5
12. Uttar Pradesh	11	10	9	12	10	12	12	10	10	11	10	12	11	12	9
13. West Bengal	2	5	6	5	5	4	5	3	4	4	3	6	4	5	6

Fluctuating behaviour in this group was that of Kerala which occupied the 11th rank in 1978-79 as against 7th in 1968-69. Of the three average income southern state of

Karnataka, Andhra Pradesh and Tamil Nadu which occupied rank between 5th to 8th in 1960-61, Andhra Pradesh continued to remain in this group throughout. Tamil Nadu showed fluctuating trend but was an average middle group state even in 1978-79. Karnataka improved its position and was placed along with the four states with above average income i.e., Punjab, Maharashtra and Gujarat. Punjab and Maharashtra continued to occupy rank amongst first three during this period. West Bengal which was second in terms of per capita income in 1960-61, joined the middle level group of states and was replaced by Karnataka.

4.1 In order to study convergence/divergence of the per capita income of states towards All India average, per capita income for the triennium periods 1960-61 to 1962-63 and 1976-77 to 1978-79 were reduced in a scale of 100 (All India average). The results are in Table III.

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Table III

States	Per capita income index for the period 1960-61 to 1962-63 assuming All India average as 100	Average per capita income index for the period 1976-77 to 1978-79 assuming All India average as 100	Increase/ Decrease in index value
Bihar	71	62	- 9
Orissa	73	70	- 3
Uttar Pradesh	81	74	- 7
Madhya Pradesh	81	70	- 11
Kerala	84	75	- 9
Rajasthan	86	82	- 4
Andhara Pradesh	92	85	- 7
Karnataka	100	104	+ 4
Tamil Nadu	106	100	- 6
West Bengal	110	102	- 8
Punjab	121	162	+ 41
Gujarat	122	107	- 15
Maharashtra	131	136	+ 5
All India	100	100	

It will be observed that except for West Bengal, Gujarat and Tamil Nadu, none of the states showed a convergent trend.

4.2 The ratio between the highest and the lowest average per capita income for the two trienniums ending 1962-63 and 1978-79, deteriorated from 1.83 (1960-61 to 1962-63) to 2.63 (1976-77 to 1978-79). Unweighted co-eficient of variation showed a substantial increase from 19.6 to 29.3.

Trends in regional inequalities:

5.1 A number of conclusions can be drawn from above. Firstly, regional inequalities as measured by co-efficient of variation and ratio between per capita income of highest state to per capita income of lowest state have increased. Secondly, all states with below average per capita income in the beginning also showed less than average growth rate during the above period. Thirdly, except for Gujarat, Tamil Nadu and West Bengal, none of the states showed a tendency towards convergence to average per capita income. Fourthly, the list of five poorest states and four richest states showed only one change each during this period. Fifthly, low income states of Bihar and Madhya Pradesh were two states with poorest per capita income growth in this period. All these are indicators of widening income disparities. However, there has been a slight mobility in ranking of states by per capita income, noticeably of Karnataka.

II

Reasons for income disparities:

6.1 We now turn to the explanation for these disparities. Firstly, the initial inter state gap in per capita incomes was so high that inspite of the fact that certain poorer states had nearly average rate of growth, their relative ranks of per capita income did not improve.

Wide initial gap:

State Plan size and per capita income:

7.1 Secondly, per capita state plan investments were generally more in richer states and less in poorer states. A study of correlation between per capita state plan expenditure and per capita income in the first year of the Plan showed increasing correlation in successive Plans. (Table IV).

Table IV

S.N. States	Ist Plan '50-'51 '55-'56	IInd Plan '55-'56 '60-'61	IIIrd Plan '61-'66	3 years annual	IVth Plan '69-'74	Vth Plan '74-'79
1. Andhra Pradesh	33	52	91	58	98	338
2. Bihar	25	40	67	40	85	211
3. Gujarat	58	76	108	84	204	516
4. Kerala	31	49	101	73	156	313
5. Karnataka	46	62	100	70	128	369
6. Madhya Pradesh	34	48	84	44	114	345
7. Maharashtra	37	57	103	83	199	527
8. Orissa	56	54	120	60	113	290
9. Punjab	175	146	212	90	316	694
10. Rajasthan	39	53	97	56	120	337
11. Tamil Nadu	28	57	98	71	134	279
12. Uttar Pradesh	25	32	72	53	132	329
13. West Bengal	54	48	80	39	82	283
Co-efficient showing positive correlation - between per capita plan expenditure and per capita income in first year of the Plan.	-		0.48	0.67	0.77	0.86

Source: Statistical Diary, 1981,(U.P.),Economics & Statistics, State Planning Institute, U.P.

Commercial bank credit and per capita income:

8.1 Thirdly, per capita advances of commercial bank credit, too showed a very high degree of correlation

with per capita income.

Table V

Statewise position of all scheduled commercial banks as at the end of June 1981

State	Deposits in lacs Rs.	Credit (in lacs) Rs.	Population (in lakhs) as per'81 census	Per capita deposits Rs.	Per capita advances Rs.	Credit deposit ratio
1. Andhra Pradesh	211576	149698	534	396	280	71%
2. Bihar	176487	70422	698	253	101	40%
3. Gujarat	287741	162265	340	846	477	56%
4. Karnataka	202966	156976	370	548	424	77%
5. Kerala	156595	114784	254	617	452	73%
6. Madhya Pradesh	127559	78386	521	245	150	61%
7. Orissa	47219	32125	263	180	122	68%
8. Punjab *	717103	93747	167	4294	561	43%
9. Rajasthan	92075	65235	341	270	191	71%
10. Tamil Nadu	163656	259442	483	546	537	98%
11. Uttar Pradesh	395948	160809	1109	357	145	48%
12. West Bengal	461474	260248	545	847	478	56%
13. Maharashtra	748212	595803	627	1249	950	76%
All India	4068271	2709506	6838	595	396	67%

Source: Reserve Bank of India Bulletin.

* Punjab does not include Haryana.

Of the states which had less than average per capita income, only Kerala got more than average credit. Higher income states like Maharashtra and Punjab had advances for higher than the average.

Other investments:

9.1 Funds invested by Central Government Undertakings in various states have, however, gone substantially

to poorer states[3]. It , therefore, appears that while higher per capita State Plan investments and commercial bank credit have gone to economically better off states, investment in Central Government Undertakings have been more progressive.

9.2 Apart from above, private investments and other central and state investments along with efficiency of investments dxcide trends of growth in State income. A variety of other factors, too, contribute to the economic growth process. Social infra-structure, including education, plays a dominant role in any long temm development strategy. In the short-term other factors may play a more dominant role.

Key factors in income generaon:

10.1 In order to study the effect of investments and their efficiency, we identified three key factors which go towards generating increased incomes. Earlier studies have revealed that consumption ofpower in the industrial sector[4] and irrigation as well as total gross cropped area in agricultural sector[5] are primarily responsible for explaining the inter-state variations/output growth. With the introduction of the high yielding varieties, fertilizer has become increasingly an extremely important determinant of agricultural production. The three important variables which we chose, therefore, were power consumption,gross cropped area and fertilizer consumption. We preferred fertilizer over irrigation, since higher per capita use of fertilizer is indicative also of the entrepreneurial nature of the people which may be reflected in adoption of modern agricultural practices, use of better quality improved seeds and pesticides. Also, the number of waterings which would

not be covered in the irrigated area figures would be reflected in the use of fertilizer since large number of waterings would require greater use of fertilizer, too. As an explanatory variable, therefore, it to us seemed to have a better value. A portion of industrial sector does not consume power, but with increasing use of power for all machines such sector was not expected to be very large. Also, for its raw material requirements this non-power using sector would be possibly dependent on other sectors and consequently move along with it if raw materials were in short supply. Service sector income could be expected to grow along with requirements in other parts of the economy.

10.2 Regression equation between total state income as dependent variable, and state power consumption, state gross cropped area and fertilizer consumption as independent variables, for the period 1963-64 to 1965-66 and 1976-77 to 1978-79 was, therefore, tried for the above thirteen states. The results are as follows:-

For 1963-64 to 1965-66: $X1 = 19.03 + 1.87X3 + 325.37X4 + 4.15X5$
(5.59) (2.66) (5.74)
$R2 = .76$

For 1976-77 to 1978-79: $X1 = 12.43 + 1.845X3 + 66.34X4 + 2.26X5$
(9.39) (3.12) (2.72)
$R2 = 0.87$

Note: Figures in bracket indicate "t" values. The coefficient are significant at 5% confidence interval.

Where X1 = State income at 1960-61 price in crore Rupees.
X3 = State ppwer consumption in crore KW.
X4 = State Fertilizer consumption in lac tonnes.
X5 = State gross cropped area in lac hectares.
h2 = Coeffidient of Determination.

10.3 In the initial years income in the primary sector was explained primarily by two factors: Gross irrigated area and Gross cropped area. In the later years since intensity of irrigation also assumed importance due to wide-spread use of chemical fertilizers, the better explanatory variables were fertilizer and gross cropped area. Actual regression also supported this:

R2		
0.66	$Y2 = 15.45 + \underset{(3.36)}{1.42X5} + \underset{(5.61)}{7.92X6}$	'66-'69
0.55	$X2 = 13.00 + \underset{(3.88)}{280.77X4} + \underset{(4.14)}{1.91X5}$	'66-'69
0.76	$X2 = 24.52 + \underset{(7.23)}{75.43X4} + \underset{(4.04)}{1.73X5}$	'76-'79
0.68	$X2 = 28.56 + \underset{(3.14)}{1.63X5} + \underset{(5.46)}{6.21X6}$	'76-'79

Where R2 = Coefficient of determination.

Y2 = Income in the primary sector.

X4= Total fertilizer consumption of the state.

X5 = Total gross cropped area.

X6 = Total gross irrigated area.

11.1 It was observed that power consumption alone explained most of the variations amongst states (R2 of XI with X3 above was 0.77) in the later period '76-'79. It was, however, not so in the earlier period (R2 with XI X3 was 0.40). State income increase per unit of power consumed remained nearly constant in the above period.

Income due to power consumption:

11.2 The major role of power consumption can be made use of, particularly so in the backward states which can increase their capita income and grow at a faster rate. Policies aimed at increasing consumption would also go towards removing regional disparities.

11.3 A major constraint in this area is the

availability of power. The All India power survey indicated the following gap for the year 1978-79.

Table VII

Projected Energy Availability and Requirement in 1981-82.

(In MUs)

State	Energy Availability	Energy Requirement	Surplus+Ve Deficit-Ve for 1981-82	Actual Availability in '80-'81	Actual Availability in 1975-76
1.Andhra Pradesh	10,099	8469	+ 1636	6613	3781
2.Bihar (edcludi ng D.V.C.)	3,740	3950	- 210	2064	2329
3.Gujarat	11,088	11094	- 6	9610	6165
4.Karnataka	6,174	10528	- 4354	6966	5402
5.Kerala	4,715	4233	+ 482	5869	4176
6.Madhya Pradesh	6,927	8616	- 1689	3591	2461
7.Maharashtra	17,819	20858	- 3039	17333	11469
8.Orissa	3,628	4135	- 507	3150	2547
9.Punjab+ Haryana	12,120	12618	- 498	9757	6260
10.Rajasthan	4,591	5999	- 1408	4084	2504
11.Tamil Nadu	10,633	12542	- 1909	10552	7712
12.Uttar Pradesh	15,044	16428	- 1384	9635	7721
13.West Bengal (Excluding D.V.C.)	7,012	6442	+ 570	4925	4331

Source: Eleventh Annual Electric Power Survey of India, Central Electric Authority, 1982.

11.4 Considering the progress made in periods '75-'76 to '80-'81, the above estimates for energy availability in '81-82 were rather over optimistic. In case the backward states could get this backlog of power, most of them would be in a far better position to generate additional incomes and be nearer to All-India average of per capita income. U.P., for example, would increase its per capita income by nearly 90 rupees (at '60-'61 prices) and

thus equal the existing average per capital income of All India level if its full requirement of nearly 16,000 M.Units were to be met.

11.5 The poorer states themselves are in no position to generate additional power by investing large funds. Power investment in these states will be evident from the following Table:

Table VIII

States	Expenditure on power as % of Total Plan expenditure(Vth Plan period (1974-78)
1. Andhra Pradesh	37.6
2. Bihar	25.2
3. Gujrat	29.4
4. Karnataka	28.0
5. Kerala	22.4
6. Madhya Pradesh	39.2
7. Orissa	40.7
8. Maharashtra	32.8
9. Punjab+ Haryana	47.0
10.Rajasthan	28.2
11.Tamil Nadu	31.3
12.Uttar Pradesh	39.8
13.West Bengal	31.9
India (Total of 22 states)	32.9

Source: Planning Commission.

11.6 Of the seven below average income states,Kerala did not have a power problem, Orissa,Uttar Pradesh, Andhra Pradesh and Madhya Pradesh made higher than average investment in power sector and Rajasthan and Bihar could have done better. The backward states

because of their low incomes are already neglecting their social infra-structure and could continue to do so only at the risk of further jeopardising their long term development strategy. Investment in the power sector, therefore, cannot possibly come out of the resources of the states.

11.7 They can only increase power availability by better utilisation of existing capacities. Thrust, therefore, in these states should be on greater managerial competence of these units. This has only limited application for poor states are, also, otherwise lacking in strong and efficient managerial cadres. Moreover, there are practical limitations of this measure like the quality of coal and quality of personnel.

11.8 Since improvement of managerial competence and additional investment by State Governments have limited scope, major results can be expected if Central Government and the private sector come in a big way in this sector in economically backward states. Wisdom of desirability of handing over of this sector in private hands may be questioned. Also investments involved being large, private sector would not be able to make a sizeable dent.

11.9 Central Government should, therefore, take upon itself the responsibility of meeting the demands of the power infra-structure for the backward states. This would indirectly help these states for otherwise they would have to employ their own resources for this purpose. Availability of additional power would stimulate also a climate whereby industries could be

attracted to these states since they would be gaining here a major infra-structure on an assured basis. It would thus further stimulate the growth process. A regional equalisation strategy, therefore, has as one of its most important corner stones, the meeting of power requirement of backward states by the Central Sector Projects. Without this, the poor states being unable to meet their own requirements, the gap would continue to widen as heretofore.

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INTER-STATE DISPARITIES IN FINANCIAL ALLOCATIONS BY THE CENTRE

by

G. Thimmaiah*

1. Introduction

India has completed 30 years of its existence as an independent sovereign nation and 22 years as a sort of federation. It has withstood the pressure of several divisive forces, manoeuvred many internal political conflicts and managed severe economic crises. It has survived as a unified nation inspite of diverse cultures and multilingual regions. It is argued that though there has been political instability both at the state and even at the national levels, the Indian federation has never faced the crisis of political instability originating from the operation of fiscal federalism. Fiscal federalism refers to the constitutional structure which divides the powers to raise revenue and to spend it between the central and state governments and also the periodic financial transfers from the central government to the state governments to reduce the vertical as well as horizontal federal fiscal imbalances. It is believed that if the federal fiscal imbalances tend to operate discriminately and the expected hopes and aspirations which initiated the formation of federation fail to materialise, instability sets in. Instability of a federation manifests

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itself in economic instability of its constituent states and the consequent dis-satisfaction or even frustration with the operation of fiscal federalism. If these symptoms of instability are not recognised early and corrective measures are not taken, the federation may eventually break down.

In order to analyse the essential conditions for the stability of a federation it is necessary to recall the major factors which led to the formation of fèderations. A major economic factor responsible for initiation and formation of federations all over the world has been the desire to increase the level of GNP by exploiting economies of scale through free mobility of factors and products and through uniform economic policies. Thus, an important economic condition for the formation of a federation is that the GNP of a federation comprising a given number of constituent states should be more than the sum of GNP of all these states without forming a federation. The second factor which influenced the formation of federations has been that the military strength of a federation should be greater than the combined military strength of all the combined states without forming a federation. This follows from the economic factor as the military strength is closely associated with the size of the GNP. The Third factor in the formation of federations is that the federating states agree through a majority decision to achieve redistribution of income within the federation. This is also essential for the stability of a federation. Hence, the conditions for the stability of a federation may be stated as follows :

1) The policy of redistributing income within the federation should be accepted unanimously by all the federating states,

2) Such a policy should be unanimously entrusted to the federal government,

3) The federal government should try to achieve this policy within a reasonable period of time say over a decade or two.

The federal government is, therefore, expected to use federal financial transfers to minimise wide inter-state as well as interpersonal inequalities of income with a view to maintaining stability of the federation.

First, the federal government should use the federal financial transfers to off-set unequal impact of its own taxation as well as expenditure policies on the budgets of the constituent states. Otherwise discriminatory impact of taxation and expenditure policies on the budgets of the poorer states may frustrate them and create the problem of instability of a federation.

Secondly, the federal government should use federal financial transfers to off-set adverse impact of inter-state spillovers of expenditure benefits and tax costs of the state governments. If such spillovers are unequal between states, inter-state fiscal imbalances result and they may give rise to inter-state conflicts and instability of a federation. Such imbalances should be minimised by the federal government through appropriate federal financial transfers.

Thirdly, the federal financial transfers should be used to ensure a minimum level of essential public services to all the citizens all over the federation. Such provision may not be possible in all states because of varying fiscal capacity and fiscal needs of different states. Therefore, federal financial transfers should be linked to the fiscal needs of the state governments for ensuring minimum level of essential public services.

Finally, with a view to reducing inter-state economic disparities, the federal government will have to use federal financial transfers in such a way as to generate economic activities in poorer states. This, in other words, means the federal government will have to interfere in the development of the constituent states with a view to reducing wide inter-state economic disparities.

In India federal financial transfers have been made through three channels : Finance Commission, Planning Commission and through Central Ministries. The relative importance of these federal financial transfers is presented in Table 1. It may be observed that the Finance Commission transfers, which are mainly intended to meet the fiscal needs and to off-set the inter-state imbalances in fiscal spillovers, have been increasing as compared to the Planning Commission transfers, which are mainly intended for development purpose. This is so even with the financial transfers through central Ministries. Besides, the central government also invests in various public

Table 1 : Federal Fiscal Transfers from the Centre to the States during the Period 1951-1979

(Rs. Crores)

Plan Periods	Statutory transfers on the recommendations of the Planning Commission (tax shares + grants-in-aid)	Discretionary transfers on the recommendations of the Planning Commission (Plan Grants & Central loans)	Discretionary transfers at the discretion of the central ministries (loans + grants)	Total federal fiscal transfers
1	2	3	4	5
First Plan (1951-56)	447 (31.2)	880 (61.5)	104 (7.3)	1431 (100.0)
Second Plan (1956-61)	918 (32.0)	1058 (38.9)	892 (31.1)	2868 (100.0)
Third Plan (1961-66)	1590 (28.4)	2738 (48.9)	1272 (22.7)	5600 (100.0)
Three Annual Plans (1966-69)	1782 (33.3)	1917 (35.9)	1648 (30.8)	5347 (100.0)
Fourth Plan (1969-74)	5421 (35.9)	4731 (31.3)	4949 (32.8)	15101 (100.0)
Fifth Plan (1974-79)	11168 (44.2)	10353 (40.9)	3761 (14.9)	25282 (100.0)

Note : Figures shown in brackets are percentages

Source : Report of the Seventh Finance Commission, Government of India, New Delhi, 1978, Appendix IV. 1 (ii), (iii), (iv), pp.174-177.

undertakings which are located in different states. All these federal financial transfers are directly made from the central government budget. However, there are some financial transfers which flow not so directly from the central government budget but through central government owned institutions such as loans from the commercial banks, development banks, Life Insurance Corporation and other central government owned financial institutions. These financial flows are mostly in the form of investment funds which go to promote developmental activities as much as plan assistance (which is provided on the advice of the Planning Commission). Since, they originate from central government institutions, it is necessary to take them also into account while analysing the impact of financial allocations by the central government among the states.

The purpose of this paper is to find out how far the financial allocations made by the central government through these various channels have been distributed equitably among different states. In other words, I would like to probe into the inter-state equity in the distribution of Finance Commission transfers, Planning Commission transfers, the Central Ministries transfers and also the flow of central government institutional finance. I am not so much concerned with the specific components of these financial transfers such as in the form of tax shares, grants, loans etc. I am interested only in financial transfers made through different organisational machinery and then I would like to evaluate the reasons for inequity, if any, in the actual distribution.

I have presented in various tables Finance Commission transfers, Planning Commission transfers, Discretionary transfers, central government investment in public sector undertakings, flow of commercial bank and development bank funds, in absolute terms, percentages and per capita figures. The purpose is to find out whether the financial transfers of funds from the central government budget and institutions to various states have been equitable or not. An attempt will also be made to find out the reasons for any inequity in the allocation of central government funds.

2. Inter-State Economic Disparities

Before we go to examine the inter-state disparities in the allocation of financial resources, it would be appropriate to make a brief reference to the existing economic disparities. Though several indicators have been used to measure the relative backwardness of different states. I have used the widely accepted summary indicator, i.e. per capita state domestic product at constant prices. Per capita SDP at constant prices would indicate the overall level of development of each state. It would also reflect the relative backwardness of different states. However, in view of its average entity, it hides the distributional aspect of development. Therefore, I have used percentage of people below poverty line as a supplementary index of relative backwardness of different states. Even in regard to this indicator, there is a controversy relating to its reliability and magnitude of absolute powerty. Therefore, I

have also used the output index of all development efforts in the form of physical quality of life index, (PQLI).

It may be observed from Table 2 that there is no clear cut pattern of association between the level of per capita SDP and percentage of people below poverty line, the level of per capita SDP and PQLI, and between percentage of people below poverty line and PQLI. However, on the basis of the level of per capita SDP we can identify a broad pattern relative backwardness of different states in the Indian Union.

Accordingly, I have grouped Punjab, Maharashtra, Haryana and West Bengal as relatively developed, Tamil Nadu, Karnataka, Kerala and Andhra Pradesh as middle level states and Assam and all the north eastern states, Bihar, Orissa, Rajasthan, Madhya Pradesh, and Jammu and Kashmir as relatively less developed states in the Indian Union. This sort of categorisation indicates only very broad aggregate trends as it is very difficult to make a categorical distinction between various states based on all relevant indicators of backwardness. Further, I have not gone into intra-state economic disparities which are as prominent as inter-state economic disparities in states like Uttar Pradesh, Andhra Pradesh, Madhya Pradesh, etc. Intra-state economic disparities, though important, are not very relevant for the theme of this paper. Therefore, the above mentioned grouping of states is only intended to capture the phenomenon of relative economic backwardness for the purpose of examining the allocation of central government financial transfers among these states.

Table 2 : Indicators of Levels of Backwardness of Different States in India

State	1961-62				1965-66		1970-71				1977-78			
	% of people below poverty line	RANK	Per-capita SDP(Rs)	RANK	Per-capita SDP(Rs)	RANK	Per-Capita SDP(Rs)	RANK	PQLI	RANK	% of people below poverty line	RANK	Per-Capita SDP (Rs.)	RANK
Andhra Pradesh	60.13	3	291	6	276	7	310	15	43	6	42.18	10	322	14
Assam	35.52	9	-	-	265	8	538	7	37	9	51.10	5	182P	16
Bihar	32.33	12	222	12.5	221	15	402	13	-	-	57.49	3	430Q	12
Gujarat	34.80	10	389	2	375	4	828	2	40	7	39.04	11	840	2
Haryana	-	-	-	-	319	5	441	11		-	24.84	15	508Q	9
J & K	28.00	13	268	7	232	14	292	16	-	-	34.06	12	355Q	13
Kerala	89.82	1	257	8	261	10	564	6	70	1	48.34	7.5	557	7
Madhya Pradesh	38.71	8	251	10	217	16	489	8	37	9	47.71	9	494P	10
Maharashtra	59.61	4	399	1	386	2	430	12	49	3	57.73	2	527P	8
Karnataka	47.16	5	241	11	243	12	685	4	48	4	48.34	7.5	723P	4
Orissa	39.73	7	222	12.5	239	13	482	10	37	9	66.40	1	488	11
Punjab	33.04	11	-	-	378	3	1030	1	50	2	15.13	16	1231P	1
Rajasthan	17.57	15	309	5	262	9	354	14	33	11	33.76	13	308Q	15
Tamil Nadu	62.99	2	325	4	317	6	595	5	46	5	52.12	4	643P	5
Uttar Pradesh	27.89	14	252	9	252	11	486	9	25	12	50.09	6	558P	6
West Bengal	46.31	6	378	3	397	1	735	3	-	-	32.54	14	784Pr	3
All India	38.71		311	-	314		638		40		48.13	-	-	-

Notes : (1) Per capita state domestic product (SDP, figures are at constant prices)
(2) PQLI = Physical quality of Life Index, Q = Quick estimates, P = Provisional, Pr = Preliminary

Source : (1) SDP data are taken from RBI Bulletins, April 1978, and September 1981.
(2) Percentages of people below poverty line are taken from VM Dandekar & Nilakantha Rath - Poverty in India, for the year 1961-62, and from Sixth Five Year Plan : in 1980-85, Government of India, for the year 1977-78

3. Finance Commissions' Allocations

The federal fiscal transfers made on the recommendations of the Finance Commissions may be characterised as statutory transfers. This is because, under Article 280 the recommendations of the Finance Commissions once accepted are binding on the part of the central government. It should be mentioned, however, that there are certain discretionary components such as share in the net yield from union excise duties in the recommendations of the Finance Commissions. Even so once the recommendations of the Finance Commissions on such shares are accepted, it is legally binding on the central government to transfer them to the state governments. This legal status of the Finance Commissions' transfers gives some sort of a guarantee and certainty for the state governments in regard to the flow of financial resources from the central government. They can anticipate the expected annual financial flows while determining the size of their budgets and also some development programmes.

There is another merit in the financial transfers made on the recommendations of Finance Commissions. The Finance Commissions recommend tax shares as well as grants-in-aid. Of late the proportion of tax shares has been increasing and that of grants-in-aid has been going down in the total amount of financial resources recommended by the Finance Commissions. This has one advantage for the state governments in that the tax shares which are fixed in percentage terms tend to increase

the actual amount of revenue received by the state governments in view of the buoyancy of the yield of the taxes whose yield is shared. As compared to this, the grants-in-aid are fixed amounts which cannot be varied for five years. Therefore, the tax shares which are elastic and which are becoming prominent in the Finance Commissions' transfers have been giving the required buoyancy for the state governments' total financial resources. Furthermore, the tax shares are mostly in the form of unconditional grants which leave the state governments free to utilise them according to their own budget priorities. This is so even in the case of statutory grants under Article 275. But the conditional grants which have been introduced under the recommendations of the sixth and seventh Finance Commissions to upgrade the standard of administrative and other essential public services are not allowed to be diverted for other purposes. In a way this combination of freedom to use a major portion of the financial resources according to the priorities of different state governments combined with some earmarking of a small portion of the resources transferred by the centre under the recommendations of the Financial Commissions tends to achieve the desired allocative efficiency in the distribution of central government financial transfers.

But most part of the resources transferred under the recommendations of the Finance Commissions are intended to meet the non-plan recurring expenditure of the state governments which includes mostly the 'police state' and a few 'merit goods' functions. No doubt, in the past 10 to 15 years the Finance

Commissions have been leaving non-plan surpluses with the state governments for utilisation for plan purposes. These surpluses become unconditional grants for plan purpose which distorts the allocative efficiency. By and large, the recommendations of the Finance Commissions are not intended to promote development activities though they go to improve the infrastructure support for development programmes. This limitation has to be borne in mind, while examining role of Finance Commissions' transfers in reducing inter-state disparities in economic development.

Table 3 presents the extent of aggregate financial transfers made by the central government to the states on the recommendations of various Finance Commissions. The ranks indicate very obvious pattern. There is a broad indication that relatively developed and middle level states have received higher absolute amounts as well as percentage shares. Even in per capita terms the middle level and more developed states have received higher amounts. Among the less developed states only Uttar Pradesh and Jammu and Kashmir have received higher per capita amounts. It may be observed that less developed states like Assam, Rajasthan and Orissa have not received as much as the other less developed states let alone relatively developed and middle level states.

These observations are only based on the comparison of ranks. A more reliable estimate of the allocation may be obtained by finding out rank correalation between financial

Table 3 : Devolution of Financial Resources from the Centre to the States on the Recommendation of the Finance Commission

State	Second Finance Commission (1957-1958 to 1961-1962 (5 Years)						Third Finance Commission (1962-1963 to 1965 - 1966 (4 Years)						Fourth Finance Commission + (1966-67 to 1970-1971 (4 Years)					
	Total assistance (Rs. crore)	RANK	% to total	RANK	Per-capita (Rs.)	RANK	Total assistance (Rs. crore)	RANK	Percent to total	rRANK	Per-capita (Rs.)	RANK	Total assistance (Rs. Cr.)	RANK	Percent to total	RANK	Per-capita	RANK
Andhra Pradesh	90.05	5	8.5	5	26.48	8	122.12	33	9.3	2	33.94	8	234.18	3	8.1	3	65.08	8
Assam	45.36	12	4.3	12	42.17	3	58.57	14	4.5	13.5	49.33	3	144.96	11	5.0	11	122.09	4
Bihar	95.32	4	9.0	4	22.00	13	102.63	4	7.8	4	22.09	14	197.46	7	6.8	7.5	42.51	16
Gujarat	35.79	14	3.4	14	18.94	15	85.18	9	6.4	9	41.28	4	121.55	13	4.2	13	58.91	11
Haryana	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Himachal Pradesh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
J & K	24.57	15	2.3	15	71.76	1	21.75	15	1.6	15	61.08	1	66.10	14	2.2	14	185.62	2
Kerala	37.91	13	3.6	13	24.31	10	68.45	12	5.2	12	40.49	5	188.61	9	6.5	5	111.58	5
Madhya Pradesh	71.54	8	6.8	8	24.18	11	86.81	8	6.6	8	26.82	13	162.03	10	5.6	10	50.05	15
Tamil Nadu	72.88	7	6.9	7	22.68	12	91.75	7	6.9	7	27.24	11	207.37	6	7.1	6	61.56	10
Maharashtra	109.85	2	10.4	2	30.12	6	119.52	2	9.1	3	30.22	9	260.38	2	9.0	2	65.83	7
Manipur	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Meghalaya	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Karnataka	73.46	6	7.0	6	33.49	4	81.23	10	6.1	10	34.44	7	215.42	5	7.4	5	91.33	6
Nagaland	-		-		-		0.68	16	0.5	16	18.23	16	58.46	15	2.0	15.5	2164.08	1
Orissa	47.25	11	4.5	10.5	28.84	7	101.20	5	7.7	5	57.67	2	231.85	4	8.0	4	132.12	3
Punjab	51.92	9	4.9	9	51.13	2	58.99	13	4.5	13.5	29.05	10	57.51*	16	2.0	15.5	28.32	17
Rajasthan	48.02	10	4.5	10.5	26.47	9	70.21	11	5.3	11	34.83	6	130.41	12	4.5	12	64.70	9
Tripura	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
U.P.	141.69	1	13.5	1	20.49	14	147.95	1	11.2	1	20.06	15	373.02	1	12.9	1	50.58	14
West Bengal	103.36	3	9.8	3	32.55	5	93.72	6	7.1	6	26.83	12	197.41	8	6.8	7.5	56.52	12
Sikkim	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Total	1048.97		100.00		26.74		1310.76		100.00		30.39		2885.86		100.00		65.68	

	' Fifth Finance Commission + ' 1969-70 to 1973-74 (five Years)						Sixth Finance Commission (a) 1974-75 to 1978-79 (5 Years)						Seventh Finance Commission (2) 1979-80 to 1983-84 (5 Years)					
	Total assistance (Rs.crore)	RANK	% to total	RANK	Per-capita (Rs.)	RANK	Total assistance (Rs. crore)	RANK	% to total	RANK	Per-capita (Rs. crore)	RANK	Total assistance (Rs. crore)	RANK	% to total	RANK	Per-capita (Rs.)	RANK
A.P.	339.28	5	7.9	5	77.99	8	776.01	4	8.08	4	162.69	12	1522.49	6	7.30	6	294.54	15
Assam	195.21	11	4.5	11.5	130.51	3	439.62	11	4.57	11	248.09	7	518.65	13	2.49	13	251.77	21
Bihar	407.38	2	9.5	2	72.79	10	844.72	2	8.79	2	134.98	14	2212.87	2	10.67	2	322.34	10
Gujarat	182.75	13	4.2	13	68.45	13	368.64	13	3.83	13	122.96	16	963.87	10	4.62	10	289.80	16
Haryana	59.61	17	1.3	17	59.39	17	120.66	20	1.26	20	107.16	21	308.57	17	1.48	17	245.48	22
H.P.	-		-		-		204.06	15	2.12	15	528.65	5	325.07	16	1.56	10	764.87	6
J & K	106.84	14	2.5	14	231.42	2	232.28	14	2.42	14	436.62	6	376.89	15	1.81	15	625.02	7
Kerala	193.43	12	4.5	11.5	90.61	5	479.97	10	5.00	10	200.99	9	770.34	12	3.70	12	295.04	14
M.P.	274.02	7	6.4	7	65.78	16	543.57	8	5.66	8	113.39	20	1597.46	5	7.66	4.5	298.87	13
Tamil Nadu	295.11	6	6.8	6	71.63	11	538.57	9	5.60	9	121.11	17	1503.60	7	7.21	7	316.81	11
Mahara-shtra	383.66	3	8.9	3	76.10	9	711.53	5	7.40	5	127.06	15	1714.06	4	8.23	3	280.44	18
Manipur	-		-		-		128.01	19	1.33	19	1007.95	2	194.03	20	0.93	20	1311.01	3
Meghalaya	-		-		-		87.52	21	0.91	21	748.03	3	134.15	21	0.64	21	1008.65	4
Karnataka	197.42	10	4.6	10	67.38	14	383.64	12	3.99	12	117.72	18	1005.00	8	4.82	8	280.57	17
Nagaland	80.72	16	1.8	16	1562.98	1	135.67	17	1.41	17	2188.23	1	240.59	18	1.16	18	3341.53	1
Orissa	250.68	8	5.8	8	114.23	4	577.32	6	6.01	6	234.40	8	984.45	9	4.72	9	361.80	8
Punjab	89.16	15	2.0	15	65.00	15	168.97	16	1.76	16	114.09	19	419.53	14	2.01	14	259.93	20
Rajasthan	221.65	9	5.1	9	86.02	6	563.92	7	5.87	7	189.49	10	902.81	11	4.33	11	267.58	19

Contd....

State	'Fifth Finance Commission + 1969-70 to 1973-74 (5 Years)						'Sixth Finance Commission (a) 1974-75 to 1978-79 (five Years)						'Seventh Finance Commission (2) 1979-80 to 1983-84 (5 Years)					
	Total assistance (Rs Cr.)	RANK	% to total	RANK	Per capita (Rs.)	RANK	Total assistance (Rs.crore)	RANK	% to total	RANK	Per capita (Rs.)	RANK	Total assistance (Rs crore)	RANK	Percent to total	RANK	Per capita (Rs.)	RANK
Tripura	-		-		-		132.19	18	1.38	18	718.42	4	199.84	19	0.96	19	942.64	5
Uttar Pradesh	620.12	1	14.5	1	70.20	12	1349.05	1	14.05	1	138.96	13	3344.74	1	15.91	1	314.56	12
West Bengal	369.26	4	8.6	4	83.33	7	822.93	3	8.56	3	162.73	11	1957.11	3	7.66	4.5	387.50	9
Sikkim	-		-		-		-		-		-		36.85	22	0.18	22	1474.00	2

Notes : 1. For estimating the per capita figures, 1957 estimated population figures have been used for Second Plan, 1961 population for the Third and Three Annual Plans, 1971 population figures for the Fourth and Fifth Plans.
2. Per capita figures and estimated by using mid-year population for 1974-78 & 1979-83.
3. * The share of composit Punjab has been allocated on population basis between Punjab, Haryana and Union Territories.
4. ** Excludes Rs.64 crores towards estate duty the details of which are not available.

Source : 1. Report of the Fifth Finance Commission, pp.210-211.
2. (+) Reserve Bank of India Bulletin, September 1969, pp.1429-1453.
3. (a) Centre-State Financial Relations, Certain Relevant Data, Finance and Planning Department, Government of Andhra Pradesh, June 1979, p.152.

Table 4 : Rank Correlation Between Financial Allocations made on the Recommendations of the Finance Commissions and Indicators of Relative Backwardness

Indicators of relative Backwardness	Finance Commissions' Transfers					
	2nd F.C.	3rd F.C.	4th F.C.	5th F.C.	6th F.C.	7th F.C.
SDP at Constant Prices Per capita	0.08	0.14	-0.09	-0.44	-0.14	0.01
Poverty	0.03	-0.36	-0.12	-0.18	-0.44	-0.55
PQLI	-0.03	-0.29	-0.05	-0.28	-0.44	-0.26

transfers and level of development as reflected by the indicators of backwardness. It may be observed from table 4 that most of the rank correlation coefficients are negative thereby implying presence of some degree of equity. However the values of these coefficients are insignificant. This would imply that the degree of equity is very low. In other words, the Finance Commissions' transfers have not been distributed more in favour of needy less developed states.

4. Planning Commission's Recommendations

Planning Commission's recommendations are not binding on the central government. However a convention has been developed that once the Planning Commission determines the central assistance to be provided to the state governments for their plans, by and large, it is transferred by the central government as a matter of routine. The only difference is that they are determined annually and even within each year the amount of assistance may be varied according to the varying economic situations of different states. Besides, the Planning Commission recommends only 30 per cent of the central assistance for state plans in the form of grants except in the case of certain problem states like Assam, Jammu and Kashmir and north eastern states. Seventy per cent of the plan assistance is provided in the form of loans which create the burden of annual reverse flow of resources from the state governments to the central government in the form of interest amount and repayment instalments.

It may be observed from table 5 that among the relatively developed states, Maharashtra and West Bengal received relatively more central assistance during the second, third, fourth and fifth five year plan periods. Punjab received highest amount only during the first plan period. West Bengal received higher share throughout the entire plan periods. Among the middle level states, Andhra Pradesh received relatively larger share, (though lower than the shares received by the relatively developed states) during all the plan periods. Tamil Nadu received relatively higher shares during all the plan periods except during the first plan period. Karnataka received impressive shares during the third plan and the three annual plan periods. Kerala received higher share only during the fifth plan period. Among the relatively less developed states, Uttar Pradesh and Bihar received higher amounts throughout the entire plan period. Madhya Pradesh received higher amount during second, third, three annual and fourth plan periods. Rajasthan received higher shares only during the first and three annual plan periods. Assam received higher amount during fourth plan period, Orissa during the first plan period and Jammu and Kashmir during the fifth plan period. Thus, the relatively more developed states have been getting more central assistance for plan purpose than the middle level and less developed states.

This is evident from the negative rank correlation between Planning Commissions' transfers and PQLI, shown in table 6.

Table 5 : Central Assistance to Individual States During Plan Period

State	First Plan (1951-56) (Rs. Cr.)	RANK	Percen-tage	RANK	Per capita (Rs.)	RANK	Second Plan (1956-61) (Rs.cr.)	RANK	Percen-tage	RANK	Per capita (Rs.)	RANK	Third Plan (1961-66) (Rs.crore)	RANK	Percen-tage	RANK	Per capita (Rs.)	RANK
Andhra Pradesh	61.00	5.5	6.93	5.5	18.98	10	96.17	3	9.00	3	27.81	8	220.49	3	8.77	2	58.33	10
Assam	21.00	14	2.39	14	21.98	8	30.59	14	2.86	14	27.61	9	99.87	14	3.99	14	78.05	3
Bihar	55.00	8	6.25	8	13.62	14	83.84	7	7.85	7	18.96	14	215.91	2	8.58	4	43.82	14
Gujarat	32.00	12	3.64	12	18.59	9	49.67	12	4.65	12	25.60	10	111.56	13	4.13	13	50.40	12
Haryana	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
J & K	10.00	15	1.14	15	30.21	5	19.46	15	1.82	15	56.19	2	61.55	15	2.45	15	76.41	4
Kerala	24.00	13	2.73	13	16.79	11	37.88	13	3.55	13	23.72	11	121.75	12	4.84	12	67.54	7
Madhya Pradesh	61.00	5.5	6.93	5.5	22.24	7	96.59	2	9.04	2	31.58	4	219.55	4	8.73	3	63.62	8
Mahara-shtra	43.00	9	5.45	9	14.29	12	84.30	6	7.89	6	22.56	12	166.82	6	6.63	6	39.48	16
Karnataka	47.00	10	5.34	10	23.14	6	67.53	9	6.32	9	30.13	6	156.52	8	6.22	8	62.53	9
Nagaland	-	-	-	-	-	-	-	-	-	-	-	-	10.80	16	0.43	16	280.51	1
Orissa	77.00	4	8.75	4	50.44	2	65.69	10	6.15	10	39.29	3	136.74	10	5.44	10	72.92	6
Punjab	141.00	1	16.02	1	151.73	1	88.29	5	8.26	5	84.59	1	134.39	11	5.34	11	111.49	2
Rajasthan	60.00	7	6.82	7	35.67	4	59.44	11	5.56	11	31.42	5	161.36	7	6.41	7	74.32	5
Tamilnadu	42.00	11	4.77	11	13.64	13	95.29	4	8.92	4	29.24	7	186.79	5	7.43	5	53.11	11
U.P.	88.00	3	10.00	3	13.49	15	120.60	1	11.29	1	17.11	15	356.24	1	14.16	1	45.63	13
W Bengal	113.00	2	12.84	2	39.86	3	72.95	8	6.83	8	22.33	13	155.15	9	6.17	9	41.43	15
Total	880.00		100.00		23.75		1068.28		100.00		26.16		2515.49		100.00		55.03	

Contd.

States	Three Annual plans (1966-67, 1968.69) (Rs. crore)	RANK	%	RANK	Per capita (Rs.)	RANK	Fourth Plan (1969-74) (Rs.crore)	RANK	%	RANK	Per capita (Rs.)	RANK	Fifth Plan (1974-1979) (Rs.crore)	RANK	%	RANK	Per capita (Rs.)	RANK
A.P.	161.50	2	8.85	2	39.46	10	240.00	5	6.86	5	53.97	14	464.03	4	7.71	4	94.49	9
Assam	85.80	12	4.70	12	59.55	4	220.00	7.5	6.29	7.5	134.85	3	290.20	11	4.82	11	153.01	3
Bihar	135.20	4	7.41	4	24.98	16	338.00	2	9.66	2	56.65	12	544.94	2	9.06	2	81.15	12
Gujarat	76.40	14	4.18	14	30.95	13	158.00	13	4.51	13	57.37	10	252.99	14	4.20	14	80.79	14
Haryana	46.41	16	2.54	16	49.97	5	70.50	16	2.24	16	74.85	6	121.19	16	2.01	16	100.32	8
J & K	60.00	15	3.29	15	153.88	2	145.00	14	4.14	14	352.02	2	496.64	3	8.25	3	1131.04	2
Kerala	89.70	11	4.91	11	45.03	7	175.00	10	5.00	10	79.48	5	277.51	12	4.61	12	112.29	5
M.P.	141.90	3	7.77	3	37.23	11	262.00	3	7.49	3	62.20	9	382.52	6	6.36	6	80.68	13
Maharashtra	111.00	7	6.08	8	23.72	17	245.50	4	7.01	4	47.43	17	391.29	5	6.50	5	67.26	16
Karnataka	109.10	9	5.98	9	39.68	9	173.00	11	4.94	11	57.16	11	308.35	10	5.12	10	90.91	10
Nagaland	17.36	17	0.95	17	420.33	1	35.00	17	1.00	17	790.06	1	77.24	17	1.28	17	1595.86	1
Orissa	80.70	13	4.42	13	39.70	8	160.00	12	4.57	12	71.77	7	272.37	13	4.53	13	109.60	6
Punjab	98.20	10	5.38	10	72.09	3	101.00	15	2.89	15	65.65	8	204.24	15	3.39	15	115.26	4
Rajasthan	119.40	6	6.54	6	49.04	6	220.00	7.5	6.29	7.5	80.68	4	333.86	9	5.55	9	107.36	7
Tamilnadu	121.00	5	6.63	5	32.11	12	202.00	9	5.77	9	49.95	15	342.32	8	5.69	8	77.98	15
U.P.	259.40	1	14.21	1	30.36	14	526.00	1	15.03	1	56.17	13	908.09	1	15.09	1	86.97	11
W. Bengal	112.70	8	6.17	7	27.01	15	221.00	6	6.31	6	47.46	16	349.97	7	5.82	7	66.01	17
Total	1825.77		100.00		36.28		3500.00		100.00		63.09		6017.75		100.00		96.64	

Note : For estimating at the percapita figures, average population of 5 years plan periods (Annual Projected Population) has been used.

Source : Centre-State Financial Relations, certain Relevant Data, Finance and Planning Department, Government of Andhra Pradesh, June 1979.

Table 6 : Rank Correlation Between Financial Allocations made on the Recommendations of the Planning Commission and Indicators of Relative Backwardness

Indicators of Relative Backwardness	Planning Commission's Transfers					
	Ist Plan	2nd Plan	3rd Plan	Annual Plan	4th Plan	5th Plan
SDP (Constant Prices) Per capita	-	-0.03	-0.20	0.01	-0.24	-0.27
Poverty	-	-	0.06	-0.23	-0.15	-0.19
PQLI	-0.23	-0.15	-0.29	-0.25	-0.44	-0.17

Table 7 : Per Capita Flow of Institutional Funds During 1973-80 to Different States

(Rs.)

State	Commercial Banks				Development Banks funds	Rank	ARDC Funds	Rank	Total Institutional funds (3+4+5)	Rank
	Credit funds	Investment funds	Total (2+3)	Rank						
Punjab	734	42	776	1	78	7	87	2	941	1
Haryana	446	74	520	3	113	4	123	1	756	3
Maharashtra	618	49	667	2	151	2	30	6	848	2
Gujarat	323	69	392	4	219	1	27	8	638	4
West Bengal	321	49	370	6	70	9	9	14	449	8
GROUP A	472	54	526		129		35		690	
Tamil Nadu	327	38	365	7	97	5	19	11	481	6
Kerala	316	69	385	5	67	10	14	13	466	7
Orissa	85	35	120	20	31	16	18	12	169	18
Assam	92	40	132	19	35	15	6	16	173	17
Karnataka	315	34	349	9	122	3	35	4	506	5
A. Pradesh	313	30	243	11	59	12	45	3	347	10
GROUP B	244	38	282		74		26		382	-
Uttar Pradesh	121	28	149	17	37	14	28	7	214	15
Rajasthan	168	51	219	12	60	11	26	2	305	12
Madhya Pradesh	111	27	138	18	26	17	32	5	196	16
Bihar	83	26	109	21	23	18	20	10	152	21
GROUP C	115	30	145		34		26		205	
Himachal Pradesh	114	61	205	13	58	13	8	15	271	13
Jammu & Kashmir	163	74	273	10	77	8	1	8	315	11
Tripura	100	49	149	15	17	19	2	19	168	19
Manipur	50	91	141	16	5	20	8	18	154	20
Meghalaya	55	127	182	14	86	6	nil	15	268	14
Nagaland	84	280	368	8	35	15	4	17	403	9
GROUP D	125	80	205		56		4		265	
ALL STATES	521	40	292		73		28		393	

Notes : For col.1 : Figures given for commercial bank credit represent difference between the outstanding credit at the end of June 1973 and that at the end of June 1980. Credit figures are according to the district of utilisation(i.e. according where the unit utilising the credit it located).

For col.2: Figures for commercial bank investment represent difference between the outstanding investments of commercial banks in the securities of state governments and other associated bodies as at the end of March 1980 and March 1973.

Source : 'Centre-State Financial Flow and Inter-State Disparities in India' by K.K. George, 1982, 1982, p.275.

Table 8 : Investment Premium, Credit-Deposit and Investment-Deposit Ratios

(All figures except percapita investment are in percentages)

States	L.I.C. (1978-79)				Commercial Banks (1973-80)							
	Investment premium ratio	Rank	Per-Capita Investment (Rs.)	Rank	Credit Deposit Ratio	Rank	Investment Deposit Ratio	Rank	Credit Investment Deposit Ratio	Rank	Proportion of banks' investments in total state loans outstanding as on March 1979	Rank
1	2	3	4	5	6	7	8	9	10	11	12	13
Punjab	42.1	10.5	11.1	4	75.5	4	4.3	21	79.8	11	60.5	8
Haryana	-	-	14.5	3	100.5	1	16.7	8	117.2	2	60.6	7
Maharashtra	20.6	16.0	5.9	9	74.3	5	5.9	20	80.3	10	51.8	16
Gujarat	40.9	13.0	9.5	6	51.5	13	11.0	14	62.5	17	54.3	14
West Bengal	22.5	15.0	3.3	20.5	55.4	12	8.4	19	63.8	16	46.3	21
GROUP 'A'	-	-	6.8	-	67.1	-	7.6	-	74.8	-	-	
Tamil Nadu	41.4	12	5.8	10	78.7	2	9.1	17	87.9	6	60.0	10
Kerala	53.5	8	6.9	7	67.1	9	14.7	11	81.8	9	55.7	12
Orissa	14.5	1	4.0	16.5	65.0	10	27.0	5	92.0	5	49.2	18
Assam	84.7	2.5	4.0	16.5	51.2	14	22.4	7	73.7	13	48.0	20
Karnataka	24.0	14	3.9	18	74.0	6	7.9	18	82.1	8	60.4	9
Andhra Pradesh	51.2	9	5.7	11	68.4	8	9.7	16	77.9	12	54.9	13
GROUP 'B'	-		5.2		71.4		11.1		82.6			
Uttar Pradesh	56.8	6	4.4	14	46.8	16	10.7	15	57.8	18	53.2	15
Rajasthan	72.3	5	6.8	8	76.0	3	23.1	6	99.1	4	57.5	11
Madhya Pradesh	56.2	7	3.3	20.5	56.9	11	13.6	12	70.5	14	49.4	17
Bihar	83.7	4	3.6	19	48.9	15	15.4	9	64.0	15	48.6	19
GROUP 'C'	-		4.2		52.6		13.7		66.1			

Contd.....2

1	2	3	4	5	6	7	8	9	10	11	12	13
Himachal Pradesh	42.1	10.5	4.2	15	36.3	17	15.3	10	1.7	21	79.6	3
Jammu & Kashmir	-	-	10.0	5	28.9	19	13.1	13	42.0	20	81.2	2
Tripura	-	-	4.9	13	69.7	7	34.2	4	103.8	3	73.9	5
Manipur	-	-	5.1	12	29.5	18	53.7	2	82.8	7	74.1	4
Nagaland	84.7	-	38.2	1	28.0	20	93.9	1	121.9	1	64.8	6
Meghalaya	-	2.5	27.2	2	16.4	21	37.9	3	54.3	19	92.7	1
GROUP 'D'	2.7		9.7		31.7		20.3		51.9			
GRAND TOTAL	41.2		5.4		64.3		10.2		74.7		54.8	

Notes : 1. Premium figures for Assam and other North Eastern States, Haryana, Himachal Pradesh, Jammu & Kashmir, Punjab and Chandigarh, Delhi and other Union Territories are not available separately.

2. Data relating to Union Territories are included in the data relating to the adjoining states.

Source : 'Centre-State Financial Flows & Inter-State Disparities in India', by K.K. Goerge, pp.279.

However, the consistently negative rank correlation between Planning Commission's transfers and per capita SDP and also percentage of people below poverty line would suggest that there is some degree of equity in the inter-state distribution of Planning Commission's transfers. But here again the values of correlation coefficients are very low which implies that the degree of equity is low even in the distribution of Planning Commission's transfers.

5. Central Government Institutional Funds

The institutional funds include the credit and investment funds provided by central government owned commercial banks, development banks, and ARDC. Table 7 shows the extent of the flow of institutional funds during the period 1973-80. It may be observed that all developed states received relatively higher absolute amount as well as higher proportions. Except Nagaland all other less developed states received relatively less and even among the middle level states, Andhra Pradesh received very less.

Table 9 : Rank Correlation between Flow of Institutional Funds and Indicators of Backwardness

Indicators of backwardness	Total Flow of Institutional Funds
SDP Per capita Constant Prices	0.57
Poverty	0.65
PQLI	0.73

The rank co-relation coefficients presented in Table 9 are significant and positive which substantiate the observation that relatively more developed states have been getting more institutional funds than the less developed states.

It should be remembered here that the commercial banks, development banks, ARDC and LIC invest funds in various projects, irrespective of their location in any particular state, depending upon their commercial profitability. This criterion tends to allocate more institutional funds to the already developed states where the prospects of higher financial returns are more. This may be defended on the ground of the operation of free market forces. Table 8 presents investment-premium ratios, credit-deposit ratios and investment-premium ratios, credit-deposit ratios and investment-deposit ratios. These ratios indicate that the central government institutions mobilise a lot of savings from even the less developed states but divert them to richer states for investment in response to higher profitability. This is again the result of market forces. But we cannot leave the flow of huge savings and investments to such blind market forces. Sometimes the so called free market forces are manipulated by vested interests. Therefore, it is necessary to regulate the flow of bank funds in India. Because the very idea of government sponsored economic planning is intended to correct the impact of the operation of blind market forces on the level of development of different regions of the economy. One of the objectives of the Five Year Plans has been

the reduction of such disparities. This objective requires appropriate distribution of investment funds. Therefore, we cannot justify the existing pattern of flow of institutional funds to the relatively more developed states. This would only suggest that either the least developed states have not been able to attract the institutional funds through proper plan projects, and/or the central government and the Planning Commission have not gone to their rescue.

6. Central Public Sector Investment in Different States

Tables 10 and 11 give the cumulative investment of central government in various public sector undertakings in different states. Most of these investments come under central sector plan and therefore, there may not be too much of overlapping between the Planning Commissions' transfer of funds to the states in the form of plan assistance and central government's investment in public sector undertakings. Most of the public sector undertakings are decided by the Planning Commission and the concerned Central Ministries on the basis of some sort of economic appraisal of the projects and the opportunity cost of scarce capital. Inspite of such appraisals, political considerations to over-ride the economic considerations and these political considerations more often help more developed states rather than the less developed states. What is more economic considerations invariably help the developed states.

Table 10 : Investment by the Central Government (in Public Sector Undertakings) in Different States

States	Cumulative Investment as on 31.3.77 (Rs crore)	Rank	% of total Investment in all States & Union Territories	Rank	Per-Capita Investment (Rs.)	Rank
Andhra Pradesh	390.7	9	3.4	9	90	13
Assam	312.9	11	2.7	11	214	4
Bihar	2509.1	2	21.9	1	445	1
Gujarat	523.4	7	4.6	7	196	5
Haryana	142.7	16	1.2	16	142	8
Himachal Pradesh	11.8	17	0.1	17	34	16
Jammu & Kashmir	5.7	18	0.1	17	12	17
Karnataka	268.2	13	2.3	13	92	12
Kerala	274.1	12	2.4	12	128	9
Madhya Pradesh	1492.7	3	13.0	3	358	2
Maharashtra	630.3	6	5.5	6	125	10
Manipur		–	–	–	–	–
Meghalaya	Nil	–	–	–	–	–
Nagaland	Nil	–	–	–	–	–
Orissa	646.5	5	5.7	5	295	3
Punjab	197.8	15	1.7	15	146	7
Rajasthan	227.1	14	2.0	14	88	14
Sikkim	Nil	–	–	–	–	–
Tamilnadu	466.9	8	4.1	8	113	11
Tripura		–	–	–	–	–
Uttar Pradesh	376.2	10	3.3	10	43	15
West Bengal	768.3	4	6.7	4	173	6
Un-allocated & others (including UTS)	2206.8	1	19.3	2	–	–
TOTAL	11451.2	–	100.00	–	209	

Note : Per capita figures are estimated by using mid-1971 population of each state.

Source: Karnataka Draft Five Year Plan 1978-83, p.240.

Table 11 : Investment by the Central Government (in Public Sector Undertakings) in Different States

States	Cumulative Investment as on 31.3.79 (Rs crore)	Rank	% of total Investment in all States & Union Territories	Rank	Per-capita Investment (Rs.)	Rank
Andhra Pradesh	513.89	11	3.3	12	104	14
Assam	382.68	13	2.4	13	210	8
Bihar	2877.02	2	18.4	2	453	1
Gujarat	762.24	6	4.9	6	241	5
Haryana	213.90	16	1.4	16	184	9
Jammu & Kashmir	6.20	18	Neg.		12	17
Himachal Pradesh	107.55	17	0.7	17	287	3
Karnataka	529.82	10	3.4	11	158	11
Kerala	382.74	12	2.4	13	154	12
Madhya Pradesh	1840.13	3	11.8	3	378	2
Maharashtra	976.96	5	6.2	5	167	10
Manipur	nil	-	-	-	-	-
Meghalaya	nil	-	-	-	-	-
Nagaland	nil	-	-	-	-	-
Orissa	710.28	7	4.5	7	280	4
Punjab	344.52	14	2.2	14	222	6
Rajasthan	291.97	15	1.9	15	97	15
Sikkim	nil	-	-	-	-	-
Tamil Nadu	615.78	9	3.9	9	132	13
Tripura	nil	-	-	-	-	-
Uttar Pradesh	658.12	8	4.2	8	67	16
West Bengal	1082.88	4	6.9	4	218	7
Un-allocated & other (including UTS)	3365.65	1	21.5	1	-	-
TOTAL	15667.93		100.00		248	

Notes : Per capita investment figures are estimated by using mid-year 1978 population of each state.

It may be observed from the tables 10 and 11 that the public sector investment in different states has been much more equitable than other forms of financial transfers except in the case of two less developed states of Jammu and Kashmir and Rajasthan and in the case of three middle level states of Karnataka, Andhra Pradesh and Tamil Nadu. It may be broadly observed that among the less developed states, Rajasthan, Assam, Jammu and Kashmir have been neglected. One may argue that these states do not have any economic advantages like mineral deposits or developed port facilities and marketing and banking centres, to qualify for these funds under economic considerations. But this cannot be held against Assam which has many natural resources to exploit. Karnataka, Andhra Pradesh and Tamil Nadu have been neglected among the middle level states. Among these three states, Karnataka is having economically viable iron ore deposits. But the central government has been playing hide and seek game to invest in Vijay Nagar Steel Plant. West Bengal, Gujarat and Maharashtra may still have certain infrastructure advantages. But these are mainly historical accidents and hence they cannot be used to justify further flow of public sector investment into these states. Even so, West Bengal received much higher share than the middle level and less developed states like Assam which have economic potentials. Even Maharashtra, West Bengal and Gujarat have continued to receive higher shares in the public sector investment.

An interesting feature of the central government public sector investment is that the share of Union Territories has been very high. This higher share in the context of absence of popular governments to demand for more investment appears paradoxical. What is more, their share increased substantially between 1977 and 1979.

Among other states, relatively more developed states like Maharashtra, Punjab, West Bengal, Gujarat and Haryana experienced increased shares, whereas less developed states like Assam, Bihar, Orissa and Rajasthan experienced decreased shares. Only Uttar Pradesh among the less developed states experienced increased share. Of the middle level states, only Karnataka experienced increased share, Kerala's share remained constant and the othermiddle level states experienced decreased shares.

7. Concluding Remarks

Thus it is clear from the foregoing analysis that the central government allocation of financial resources through various channels have not gone to help the less developed states as much as the more developed states. One may defend this kind of allocation of central assistance on the grounds that it would be desirable to utilise scarce capital funds in places where they are most productive and also that denial of funds to the relatively developed states would amount to penalising efficiency. These arguments cannot be sustained until the central government's financial resources are equatably

distributed and then their utilisation by different state governments are objectively evaluated.

It may be observed here that the Finance Commission's transfers have been unequally distributed mainly because of the outmoded methodology used by the Finance Commissions to determine fiscal needs of the states. This has been proved beyond doubt elsewhere.[1] Therefore, it is high time if the eighth Finance Commission changed the methodology to make its transfers equitable. This can be achieved if the financial transfers are recommended on the basis of an objectively assessed fiscal needs of the state governments.

Though Planning Commission has been using Gadgil formula to distribute plan assistance among the states, it is necessary to modify it so as to take into account the needs of the less developed states by linking the plan assistance to the level of development achieved in different sectors in each state. The required modifications which will make the plan transfers more equitable are suggested elsewhere.[2]

Central government should have a national policy in regard to the investment of funds by the commercial banks and other financial institutions in different states. Though priority sectors like agriculture and 'target groups' of people have

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[1]See for details G. Thimmaiah, A Critique of the Finance Commission, Wheeler & Co., Allahabad 1981.

[2]See G. Thimmaiah, Burden of Union Loans to the States, Sterling Publishing House, New Delhi, 1977.

been receiving gradually increasing share of bank credit, its regional distribution needs more equity. This is an urgent policy decision which cannot be postponed for long.

Finally, the public sector investment has no doubt been concentrated in certain developed states and if it has gone to the less developed states it is mainly because of the advantage of having raw material deposits as in Bihar and Orissa. But even this has not been consistently followed as it has been shown in the case of Assam. This has been so even in the case of middle level states like Karnataka. The central government has been benefiting mainly the developed states even on political grounds and ignoring less developed states like Jammu and Kashmir, Rajasthan and Assam. Any meaningful central-state dialogue on national issues can be amicable only if the state governments feel that the central government has been fair in allocating its investment funds equitably. This is yet to be proved by central government.

I have already outlined in the first section the probable consequences of discriminatory impact of federal government policies on the stability of federation. The signs of instability are already visible for all those who are vigilant. The prices for closing the eyes to such signs is very high as it is evident from the example of Pakistan. Our political leaders have to learn the lessons from such experiences very fast.

N.B.B.

INTER STATE DISPARITIES IN PLAN OUTLAYS

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"There is a lot of discussion about regional backwardness. Yet about the basic problem of Plan Outlays in a federal polity, there is very little thinking. But I think it is important that there is a debate, a much wider debate than at present on these questions".[1] This call was given in the sixties by Gadgil, the then Vice-Chairman of the Planning Commission.[2] But despite this call to focus attention on the relative size of the different States' Plan Outlays, discussions on inter-state disparities and inter-state equity, continue to place the traditional emphasis on the progressiveness of the Central Plan assistance to states. But this emphasis on plan transfers has always been a misplaced one for a mere progressiveness in plan transfers in itself may not lead to reduction of regional disparities unless it succeeds in bringing about progressivity in states' plan expenditure. This is possible only if the progressivity in Plan transfers is of such a degree and of such a magnitude as to counter the existing regressiveness in the other resources of states both internal and external. The need for shifting the emphasis to plan outlays from plan transfers has increased in recent years as the proportion of Central Assistance[3] to State Plan Outlays has been coming down in recent plans. This is particularly true of the developed states as may be seen from Table 1.

The plan outlays of the states account for about half the total Public Sector Plan Outlays. What is more, the share of States in the total Plan Outlays has been increasing in recent plans. The size of

the Plan Outlays, apart from its direct impact on regional disparities, also exerts indirect influence by influencing the non plan expenditure and consequently the financial flows through the Finance Commissions. For instance, the larter plans raise the admissible non plan revenue and capital expenditure in the succeeding plan periods covered by the subsequent Finance Commissions. The rank correlation coefficients between the per capita Fourth Plan Outlay and the non plan revenue expenditure during the Fifth Plan was +0.589. The coefficient for the Fifth Plan Outlay and the non plan expenditure during the Sixth Plan was +0.517.

This is not surprising as the committed plan expenditure at the end of each plan becomes a charge on the non plan revenue account. Expenditure on maintenance of capital assets built up as part of previous plan programmes becomes a non plan liability of the States' revenue budget. Similarly, states which have built up higher standards of social and administrative services, become entitled to higher non plan expenditure in subsequent plans. Larger state plans involve larger borrowings for the States. Servicing of these loans becomes a charge on the non plan revenue budget. Thus as noted by the Administrative Reforms Commission's Study Group, "it becomes more and more difficult to assess the budgetary gaps since the budgets themselves increasingly reflected plan expenditure."[4] As a result, the poorer States which had lower plan expenditure in the past become eligible for smaller admissible non plan expenditure under the Finance Commission's approach of filling the gaps in the normative non plan revenue budgets of States.

Similarly, the non Plan Capital gaps which the recent Finance Commissions are called upon to fill are determined by the size of the past Plan Outlays and the pattern (loan grant composition) of their financing.

The size of the Plan Outlays as also its sectoral allocation influences the financial flows from the financial institutions by raising the Credit absorption capacity in a State. It may be recalled that one of the standard defence arguments of the financial institutions for their inequitous financial allocation to the poorer states is the smaller credit absorption capacity of these states, a result of the low levels of development of infrastructure under their plans.

Table 2 shows that the per capita State Plan Outlays are highly regressive. This is also seen from the high degree of positive correlation between per capita income at the beginning of the Plan period and per capita Outlays of the subsequent plans given in Table 7. During all the plans except the Third and the Fourth, these correlations were positive and significant statistically. Disparities in Plan Outlays were far greater than those in Plan transfers. During the two and half decades covered by our study (1956-1981), the top income States managed to get higher Plan Outlays than the States in all other groups except those in the special category. This was true of all Plan periods except the Third when the middle income States had a slight edge over the high income States. The low income States as a group had only the smallest Outlays during all Plan periods. During the entire two and half decades taken as a whole, Punjab, Haryana, Gujarat and Maharashtra had the highest per capita Plan

Outlays. The Outlay of Bihar was the lowest. During the whole period, per capita Outlay of Bihar was less than one half that of Punjab and Haryana. The Outlay of Uttar Pradesh was only a little more than half that of Punjab and Haryana.

The skewness of State Plan Outlays is brought out by the fact that only five out of 15 non special category States had a Plan Outlay higher than the all States' average. Of these, four belonged to Group A, and only one (Assam) belonged to Group B. None of the low income States could manage to have a Plan of national average size.

Criteria for Determining the Size of the Plan Outlays

For ascertaining how the declared equalisation objective was scuttled in the process of determining the size of the State Plan Outlays, one has to examine the criteria which determined the size of the Plan Outlays. For this, the Plan era can be divided into two periods, the one before and after the Fourth Plan (1951-69 and 1969-). During the earlier period, there were no definite criteria governing either the Plan Outlay or the Plan assistance. During the second period, the 'objective' Gadgil formula determined the quantum of the Central Plan assistance directly and the size of the States' Plan Outlays indirectly.

As the Administrative Reforms Commission (ARC) study team noted, during the first period (1951-1969) "After the Plan Outlays and financial resources to be raised have been determined for the Centre on the one hand and the States on the other, the gap filling between the States' resources and their Plan Outlays is left to be met by assistance from the Centre.[5]

There were no definite criteria in the formulation of State Plan Outlays either. Hanson commented caustically, "the criteria for judging the Plans which the Commission has publicly proclaimed are at best vague and at worse ambiguous."[6] He quotes an intelligent and experienced informant in Maharashtra as saying, "The extent to which the Planning Commission agrees to accept the States' own targets and to supplement the States' own resources depends on a process of haggling in which a great deal of cunning but very little science is displayed on both sides."[7] The criteria for determining the size and pattern of States' Plan Outlay were too numerous, diverse and often contradictory to have any operational significance. In the process, the relative bargaining power, more than any rationale came to have dominance. For instance, the States' First Five Year Plans included projects/programmes which were in progress before the commencement of planned economic development. 'A broad view' was supposed to have been taken about the development efforts that were envisaged in the different states.[8]

The Second Plan is supposed to have taken into consideration the following factors in determining the Plan Outlay : (i) Population, (ii) Commitments on account of the First Plan, (iii) Expected achievement of development at the end of the First Plan, (iv) Expected revenue contribution of the States and programmes for irrigation and power.[9] The Third Plan seems to have taken into account a still larger number and variety of factors including "needs, problems, past progress and lags in development, likely contribution to achievement of the major national targets, potential for growth and the contribution in resources which the State could make towards its development programmes. In assessing

needs and problems, such factors as population, area, levels of income and expenditure, availability of certain services, for example roads, schools, hospitals, extent of commitments carried over from the second Plan, commitments on account of large projects or special programmes and the State of technical and administrative services available were taken into account. Care was also taken to see that States whose resources were unavoidably small did not have to limit development to a scale which was altogether insufficient merely because of paucity of resources. At the same time, States which were able to make larger efforts in mobilizing their own resources could undertake development on an appropriate scale."[10] How and why these criteria were selected, in what fashion they were combined and what weightage was given to each of them are anybody's guess including that of the Planning Commission. One can only judge by the results that followed.

It appears that the approach of the Planning Commission towards State Plan during the earlier period was first to determine the size of the Outlays independently and then to treat Plan assistance as a residual factor to fill the gaps between Outlays and States' other resources. This approach was very sound. But the Planning Commission failed to translate this approach into equitable criteria to determine the size of the Plan Outlays and Plan assistance and this failure is seen in Table 2 and 6.

The approach under the Gadgil era (1969-) which continues to hold good even now is to treat the size of the Plan Outlays as a residual factor. The Gadgil formula which is described as

an objective formula first determines the quantum of Plan assistance to each State. The States are then free to determine the size of their Plans, depending on the volume of additional resources which they can mobilise. Thus, the State Plan Outlays under the formula can become progressive only if the Gadgil formula has a very high degree of progressivity, sufficient enough to counteract the regressivity in the States' mobilisation of other resources. It may be remembered that during the Fourth, Fifth and the Sixth Plans, the importance of Central Plan Assistance to finance State Plan Outlays has come down steeply. It is this increasing importance of other resources and the absence of equity in the Gadgil formula, as we will be seeing later in this paper, which have led to regressivity in States' Plan Outlays.

Before we proceed to examine the progressivity in the allocation of Central funds under the Gadgil formula, it is necessary to see the regressivity of the resources available to states other than Central Plan Assistance. This is necessary to understand the degree of progressivity necessary in Plan transfers to achieve a progressive Plan Outlay.

Table 3 gives the per capita resources other than the Central funds available to each state to finance its plan outlays during each of the Five Year Plans. It is seen that the 'other resources' of Group A States were much larger than those of other Groups including Group D. These resources of Group C and D were less than half that of Group A. The resources of Jammu and Kashmir were less than a quarter that of Punjab. The resources of Assam and Bihar were only one third that of Haryana. The other resources of Punjab and Haryana exceeded even the Plan Outlays of all the non special category states except Maharashtra

and Gujarat. That these resources of States are positively related to the per capita income is borne out by the positive and significant values of the coefficients of rank correlation. The resources which now finance about 60% of Plan Outlays are of two types.

1. Internal Resources of States
2. States' internal debt

The higher levels of own resources of the developed states were not due to their greater exploitation of their resource base, but was due to the bigger size of their base.[11] The major items of States' resources are : (i) Balances from current revenues at the base level of taxes and rates; (ii) Contributions of public enterprises; (iii) Market and other institutional borrowings; (iv) Miscellaneous capital receipts; and (v) Additional resource mobilisation.

The wider and more elastic resource base of the richer States enables them to have higher balance of current revenues. Contribution of Public enterprises is not solely dependent on the rates charged or the efficiency of management. It is also a function of the volume and pattern of investments made in the earlier plans. This resource too, thus favours the developed states. Miscellaneous net capital receipts may be negative or positive depending on net inflow or outflow of funds depending on the state's debt outstanding which again is a consequence of the regressive 'pattern of assistance' of Plan and Non Plan transfers, in the past. It also depends on the debt relief provided by the Finance Commissions. Thus the inequities of the past Plans haunt the current plans.

The inequitous transfers made by the Finance Commissions and the way they add to the internal resources of States (balances from current revenues) for Plan financing too deserve mention here. In the case of some States, the Finance Commissions' awards just covered their non Plan revenue budgetary deficits, by means of grants. But in the case of others, they left large surpluses as may be seen from Table 4. There is a positive and statistically significant correlation between the per capita non plan revenue surpluses left by the Finance Commissions and the per capita state incomes. In fact, during the Fifth Plan, governed by the Sixth Finance Commission's award, correlation was perfect (the coefficient being +1). During the Sixth Plan, covered by the Seventh Finance Commission award, the value of the coefficient came down; but it was still positive and high (0.521). Even the statutory transfers suggested by Raj Krishna would not have led to surpluses which are progressive as their correlation though weak was positive.[12] The position is the same even if we take the overall surpluses in the combined capital and revenue accounts as may be seen from columns 5-7 in Table 4.

Internal Debt

The own resources of States are supplemented by the budgetary support given by the All-India financial institutions under the ownership and control of the Central government like the commercial banks, Life Insurance Corporation, Reserve Bank of India, Rural Electrification Corporation and Housing and Urban Development Corporation. Other autonomous organisations like the Commodity Boards, Khadi and Village Industries Commission, National Cooperative Development Corporation and Warehousing Corporation, created,

controlled and nurtured by funds from the Union Government also supplement the internal resources of the more developed States to a larger extent than that of the less developed States. This may be seen from Table 5 which gives the State-wise distribution of the internal debt and its principal component viz. market borrowings.

Market Borrowings

The expression 'Market borrowing' is really a misnomer in India as all the loans are subscribed largely by the financial institutions under the control of the Central Government. In other words, the market for borrowings by the States is really a captive market of the Union Government. The quantum of market borrowings of each State and its subscription by different agencies are actually determined by the Planning Commission, the Union Ministry of Finance and the Reserve Bank of India. Ninety four per cent of the State Government securities outstanding at the end of March 1980 were owned by Commercial Banks, Life Insurance Corporation and the Employees' Provident Funds.[13]

Table 5 clearly shows that these financial institutions helped only to aggravate the problem of disparities in States' own resources instead of countervailing their disequalising tendencies. The positive correlation between per capita income on the one hand and internal debt and its major component - market borrowings - on the other, was statistically significant.

It is in the light of the above discussion on the disequalising forces of internal resources (to which the Finance Commissions and the financial institutions have only contributed) that we must examine how progressive the Central Plan Transfers had been?

Table 7 shows that the rank correlation between per capita Central Plan Assistance and state income had been weak and statistically not significant during all Plan periods, including those covered by the Gadgil Formula. Table 6 which gives the state-wise flow of Plan funds in Per Capita terms during different plan periods also confirms this lack of progressivity in Plan transfers. It is true that large amount of Plan funds were received by the special category States (Group D). This group had received the highest per capita Plan transfers which were far higher than that of any other group. Large assistance to such States was, of course, inevitable in view of their slender resource base and their near total dependence on the Central transfers for their Plans. It may also be conceded that the top income States as a group received less Plan assistance than the low income States except during the Second Plan. But one has also to take note of the fact that next to the Group D States, it was the middle income States and not the low income States which received more per capita Plan transfers during all Plan periods except the Fourth. The low income States received only less than the national average during all Plans. Besides, though the Group A States as a whole received less amounts of Plan funds than all other groups, two out of the five States in this group received amounts higher than the national average. These two States which ranked first and second in per capita income, viz. Punjab and Haryana received more Plan transfers than three of the four low income States. In fact, Haryana received more funds than even the fourth State in Group C i.e. Rajasthan. Three of these four low income States got less than the all States' average during the twenty five year period as a whole. The above as also the low value of the correlation

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coefficient only shows that the Planning Commission did not have any definite idea of using Central Plan assistance as a corrective to regional disparities by bringing out progressivity in Plan Outlays. When the Plan assistance itself lacks progressivity, it cannot hope to counter the regressiveness of States' own resources as also of institutional financial flows to budgets.

How come that despite repeating ad infinitum its commitment for a regionally balanced development, the Planning Commission failed to introduce equity either in the Plan Outlays or in the allocation of Plan Assistance? As seen earlier, till 1967, the Planning Commission had not evolved any rational Principles to determine either the size of the Plan Outlays or of the Central Plan Assistance. The results of such unprincipled determination of Plan Outlays and allocation of Plan funds are there for all to see in Tables 2 and 6. But what contributed to the regressiveness in Plan transfers during the later plans governed by the objective Gadgil formula? The transfers under this formula had been only a shade better than in the past for the poorer states. To analyse this failure, one has to analyse the ingredients of the formula.

According to this formula, accepted by the National Development Council in 1968, States like Jammu and Kashmir, Nagaland and Assam were given special consideration. The balance available in the divisible pool of Plan resources was to be distributed according to five criteria. Population was the major criterion which was assigned weightage of 60 per cent. The second criterion was per capita state income with a weightage of 10 per cent. Only States below the all States' average of per capita income were eligible to claim this part of the divisible pool.

Another 10 per cent was to be distributed according to tax efforts in relation to per capita income. Yet another 10 per cent was set apart to meet the special needs arising out of commitments on major, continuing power and irrigation projects. The remaining 10 per cent was to be allotted taking into account the special problems arising out of metropolitan areas, floods, chronically drought affected areas and tribal areas.

The uncertainty regarding the grant-loan component, a bane of the 'patterns of assistance' in earlier Plans was also removed. Seventy per cent of the transfers was to be given as loans and the balance as grants. For the States of Jammu and Kashmir, Assam and the hill States of the North East, the proportion of grants was however, 90 per cent. The formula underwent some changes in 1978-79. The weightage given to special factors was reduced which is now added to the weightage for per capita income.

Except for the weightage of 10 per cent (raised to 20 per cent during the Sixth Plan) given to the per capita income of backward States, there is no other equalising factor in the formula. The role of population as an equalising factor is limited. The weightage given to tax norm is unexceptional in principle. But a norm which is not progressive with State income enables the richer States to show better tax performance and thus to corner more of the Central Plan funds. The high ratio of tax revenue to per capita income does not by itself reflect the degree of utilization of tax potential. In the absence of per capita norms progressive with State income, the canon of equity - equalisation of benefits and sacrifices - is not likely to be satisfied. The remaining factors which had been given 20 per cent

weightage cut both ways and dilute the objectivity of the formula. These give some elbow room for the Planning Commission to manoevuring. This may explain the changes in the relative position of States during the Fourth, Fifth and the Sixth Plans under the same 'objective' formula. The criterion of commitments on major continuing power and irrigation projects is a shifting one. The weightage given to special problems like metropolitan areas actually benefits the urbanised States which are more industrialised and therefore have larger resource potential. Chronically flood and drought affected areas and tribal belts exist in all the States, irrespective of their income status. Central assistance according to these criteria would benefit both the rich and poor States depending upon their bargaining power and the degree of patronage of the Centre enjoyed by them at any given time. If past experience is any guide, developed States with their better administrative machinery manage to appropriate to themselves more resources on these bases.

Besides, in all fairness to the Gadgil formula, it may be noted that all the Plan funds are not brought under the formula. For example, of the Rs.7,900 crores of Plan funds that were available for distribution among States during the last four years of Sixth Plan (original version under the Janata Rule) it was decided by the National Development Council that only Rs.4,200 crores (53.2 per cent) were to be brought under the Gadgil formula. Of the remaining, 22.8 per cent was set apart for Special Category States, 10 per cent for hill areas and 7.6 per cent for special problems areas. Funds from IDA credit (6.3 per cent) also was not added to the divisible pool. If past experience is any guide, the funds meant for the last three purposes are likely to be

cornered by the more developed States with their better oiled administrative machinery.[14]

The criterion of uniform grant loan composition of Central Assistance applicable to all States except for the special category States and Assam irrespective of their developmental status is equitable only on the face of it. By its treatment of unequals, it does not take care of the principle of vertical equity. It may be remembered that even in international financial assistance, the Principle that the grant component should vary in favour of 'hard core' developing countries is accepted now. In fact the grant component of the Official assistance of many of the OECD countries to developing countries was more than that of Central Assistance for State Plans in India.[15]

Thus, Gadgil, the then Vice-Chairman of the Planning Commission with his thorough understanding of the regional problems in India was also not able to bring about greater progressivity in his formula for Central Plan assistance. The explanation is that the conflicts of interests between the rich and poor States represented in the National Development Council could have been resolved only by political compromises based, as it happens, on expediency rather than on principles of equity. These meetings have now assumed the character of North-South summits. As it happens in such summits, an illusion of equity was provided by the National Development Council too by assigning ten per cent weightage to per capita State income of the backward States. This should lead us to a discussion on a few fundamental questions regarding the problems of India federal polity. This however, has to be postponed to another forum.

Summing up, during the first eighteen years of planning, the poorer states suffered in the absence of an objective formula to determine both the size of the State Plan Outlays and the Central transfers. During the next twelve years, these States continued to suffer in spite of the implementation of an 'objective' formula which was not sufficiently progressive even in itself. In any case, the degree of progressivity in the formula was not enough to bring about progressivity in States' Plan Outlays. In retrospect, it would appear that the approach of the Planning Commission before the Gadgil formula, viz. to determine independently the size of the Plan Outlays and then to treat the Plan assistance as a residual factor, was more sound. But the earlier plans failed in translating this sound approach to objective and equitable criteria in determining the size of the Plan Outlays and the Central Plan assistance. In its anxiety to clear the above drawbacks of the earlier approaches, the present Gadgil formula seems to have thrown the baby too with the bath water. In view of the decline in the share of Central Plan assistance in State Plan Outlays, the cause of regional disparities can be sub-served only if the Plan Outlays are governed by independent criteria which are not only objective but also equitable. They should not be left to be determined by the larger resource base of the States and the inequitous budget support given by the financial institutions.

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Table 1 : Proportion of Central Assistance to State Plan Outlays

(In Percentages)

States	Plan Periods						
	II	III	AP	IV	V	VI	Total
Punjab	58.5	52.9	44.1	33.1	24.7	19.1	30.3
Haryana	58.5	52.9	61.0	32.7	25.5	26.6	33.3
Maharashtra	34.7	38.5	26.7	26.6	19.9	25.0	25.2
Gujarat	33.8	46.9	35.9	33.7	24.6	22.0	29.2
West Bengal	46.8	51.6	67.6	65.9	38.8	32.4	44.3
GROUP A	42.2	46.1	40.2	35.4	25.7	25.5	31.3
Tamil Nadu	51.0	54.6	47.6	37.9	55.2	40.3	48.0
Kerala	47.9	67.0	62.7	65.9	52.3	35.6	52.7
Orissa	73.8	61.0	59.8	69.7	55.2	67.3	62.2
Assam	48.6	75.4	96.1	65.4	68.8	67.5	69.4
Karnataka	48.6	62.4	59.6	47.7	34.4	30.1	41.4
Andhra Pradesh	53.1	63.9	68.5	55.2	41.2	47.5	49.4
GROUP B	53.3	62.4	62.0	53.8	48.0	46.1	51.8
Uttar Pradesh	52.9	63.6	56.4	64.2	48.0	44.0	50.4
Rajasthan	59.4	76.6	86.6	95.7	41.4	9.5	50.2
Madhya Pradesh	66.2	76.2	81.1	90.2	34.7	38.5	51.1
Bihar	47.4	65.1	68.6	39.7	53.4	56.6	51.9
GROUP C	55.4	68.6	67.7	77.7	43.7	39.9	52.6
Himachal Pradesh	58.5	52.9	-	82.4	78.8	85.1	78.4
Jammu & Kashmir	72.1	100.0	91.8	105.8	86.9	84.2	90.0
Tripura	-	-	-	179.4	60.2	71.6	88.4
Manipur	-	-	-	78.2	54.5	83.2	66.7
Nagalanad	48.6	71.3	85.6	97.9	75.9	92.9	83.1
Meghalaya	48.6	75.6	96.1	84.6	81.2	86.0	82.2
Sikkim	-	-	-	-	92.1	95.4	93.4
GROUP D	64.2	84.2	90.9	99.7	78.6	84.4	84.1
All States	50.8	60.4	57.8	51.6	41.1	39.4	46.3

Notes : 1. AP refers to the three Annual Plans for the years 1966-67, 67-68 and 68-69.

2. All the five years from 74-75 to 78-79 are included in the Fifth Plan. Likewise in Sixth Plan is taken to include 1979-80 and 1980-81. This is not strictly according to the Planning Commission's Calendar regarding the end of the Fifth Plan and the beginning of the Sixth Plan.

3. States have been ranked according to their ranks in Per Capita SDP during 1967-70.

4. The groupings of all States except those in Group D are based on Per Capita State income. The groups are :

   a) five top income States - those with P/C SDP of more than 10% of all states average. The five states in this group accounted for 26.8% of the population in 1981.
   b) Six middle income states have SDP in the 10% range around the national average. Their share in country's population is 31.8%.
   c) Four low income states have SDP below 10% of all States average. Their share in population : 39.2%
   d) Seven Special Category states share in population : 2.2%

Table 2 : State Plan Outlays, 1956-81

	Rupees per Capita							Index Numbers						
	Plan Periods							Plan Periods						
	II	III	AP	IV	V	VI	Total	II	III	AP	IV	V	VI	Total
Punjab	88	118	102	216	604	335	1463	151	122	145	171	174	165	162
Haryana	88	118	96	225	615	353	1495	151	122	137	178	177	174	166
Maharashtra	67	109	103	178	447	248	1152	115	113	147	141	128	122	128
Gujarat	90	115	101	170	462	276	1214	155	119	144	134	133	136	135
West Bengal	59	86	47	73	268	176	709	101	89	67	57	77	87	79
GROUP A	72	105	85	151	421	247	1081	124	109	121	119	121	122	120
Tamil Nadu	62	102	74	126	221	144	729	106	106	105	100	64	71	81
Kerala	58	107	83	129	277	191	845	100	111	118	102	80	94	94
Orissa	61	128	75	102	306	190	862	105	133	107	81	88	94	96
Assam	71	114	75	179	334	200	973	122	118	107	142	96	99	108
Karnataka	72	106	76	120	328	193	895	124	110	108	95	94	95	99
Andhra Pradesh	58	96	64	97	369	180	864	100	100	91	77	106	89	96
GROUP B	63	106	73	118	304	178	842	108	110	104	93	87	88	93
Uttar Pradesh	36	76	62	109	321	169	773	62	79	88	86	92	83	86
Rajasthan	63	104	67	117	351	197	899	108	108	95	92	101	97	100
Madhya Pradesh	56	89	53	92	329	231	850	96	92	75	73	95	114	94
Bihar	46	72	48	199	212	122	699	79	75	68	157	61	60	78
GROUP C	45	81	57	103	297	173	756	77	84	81	81	85	85	84
Himachal Pradesh	88	118	-	347	778	462	1793	151	122	-	275	224	228	199
Jammu & Kashmir	83	172	174	343	1038	476	2286	143	179	248	272	298	234	254
Tripura	-	-	-	263	611	398	1272	-	-	-	208	176	196	141
Manipur	-	-	-	326	1100	572	1998	-	-	-	258	316	282	222
Nagaland	71	293	453	775	2190	906	4688	122	305	647	615	629	446	520
Meghalaya	71	114	75	395	949	542	2146	122	118	107	313	273	267	238
Sikkim	83	152	180	355	2238	1266	3500	143	158	257	281	643	624	389
GROUP D	58	96	70	126	978	513	2261	100	101	100	104	281	253	251
All States	58	95	70	121	548	203	901	100	100	100	100	100	100	100

Notes & References

1. Source for the Second, Third and Annual Plans, draft Fourth Five Year Plan, p.75. For other Plans, Finances of State Governments, op cit.
2. Fourth Plan figures of Meghalaya, Tripura and Manipur for the years when they had not became States are repetitions of the figures for the first ensuing year for which data are available.
3. For other notes, see footnotes to Table V.1.
4. Figures except for 1980-81 are of actuals. For 1980-81, theirs are of revised Estimate.
5. For arriving at this Per Capita figure, 1951 Population has been used for the Second Plan, 1961 Population for the third plan, and the three annual Plans, 1971 Population for the fourth and fifth Plans and 1981 Population for the sixth Plan.
6. Index Numbers have been calculated taking this All States average as base.

Table 3 : States' Resources for Plans (States' Plan Outlays - Central Plan Transfers)

States	Rupees per Capita							Index Numbers						
	Plan Periods							Plan Periods						
	II	III	AP	IV	V	VI	Total	II	III	AP	IV	V	VI	Tota
Punjab	36	56	57	144	455	271	1019	132	147	196	236	222	220	210
Haryana	36	56	38	149	358	259	996	132	147	131	244	223	211	205
Maharashtra	44	67	75	131	358	186	861	157	176	258	214	175	151	177
Gujarat	59	61	65	112	348	214	859	210	160	217	183	170	174	177
West Bengal	31	41	15	25	164	119	395	110	107	51	41	80	97	81
GROUP A	42	57	51	98	313	184	743	144	150	175	159	153	150	153
Tamil Nadu	30	47	39	78	99	86	379	107	123	134	127	48	70	78
Kerala	30	35	31	49	130	123	398	107	92	106	80	63	100	82
Orissa	16	50	30	31	137	62	326	57	131	103	50	67	50	67
Assam	37	28	3	60	104	65	297	128	73	10	98	51	53	61
Karnataka	37	40	31	63	215	135	521	132	105	106	103	105	110	107
Andhra Pradesh	27	35	20	44	217	94	437	96	92	69	72	106	76	90
GROUP B	29	40	28	55	158	96	406	107	105	93	88	77	78	8
Uttar Pradesh	17	28	27	39	178	95	383	60	73	93	83	87	77	7
Rajasthan	26	24	9	5	206	178	448	92	63	31	55	100	145	9
Madhya Pradesh	19	21	10	9	215	142	416	67	55	34	50	105	115	8
Bihar	24	25	15	120	99	53	336	85	65	51	231	48	43	6
GROUP C	20	25	19	23	167	104	358	71	68	62	37	81	85	7
Himachal Pradesh	36	56	-	61	165	69	388	132	147	-	98	80	56	8
Jammu & Kashmir	23	Nil	14	-20	136	75	228	82	-	44	70	66	61	4
Tripura	-	-	-	-209	243	113	147	-	-	-	116	119	92	3
Manipur	-	-	-	71	500	96	667	-	-	-	134	244	78	137
Nagaland	37	84	65	16	527	64	792	128	205	103	206	257	52	16
Meghalaya	37	28	3	61	178	76	382	128	73	10	39	87	62	7
Sikkim	-	-	-	-	176	57	229	-	-	-	-	85	46	4
GROUP D	30	24	16	1	209	80	359	135	36	55	103	102	65	7
All States	29	38	30	61	205	123	486	100	100	100	100	100	100	10

Note : 'Own' resources of States include their market borrowings as well as loans taken directly from the financial institutions.

Table 4 : Non Plan Budgetary Surpluses Under the Awards of the Finance Commissions

(Rupees Per Capita)

States	Revenue Surpluses				Total Surpluses after Debt Relief		
	Finance Commissions				Finance Commissions		
	IV	V	VI	VII	VI	VII	Total
Punjab	27	87	252	597	277	439	716
Haryana	-	80	223	676	202	490	692
Maharashtra	55	83	149	596	171	479	650
Gujarat	4	60	126	423	131	322	453
West Bengal	4	-	-	157	-2	129	127
GROUP A	-	-	-	439	123	341	464
Tamil Nadu	-	-	45	159	44	116	160
Kerala	-	-	-	112	-8	78	70
Orissa	-	-	-	15	-7	-18	-25
Assam	-	-	-	74	-9	35	26
Karnataka	-	-	79	343	78	243	321
Andhra Pradesh	-	-	-	217	-8	151	143
GROUP B	-	-	-	174	19	118	137
Uttar Pradesh	2	32	-	233	-2	165	163
Rajasthan	-	-	-	85	-12	23	11
Madhya Pradesh	-	4	27	282	30	207	237
Bihar	19	35	-	205	-3	145	142
GROUP C	-	-	-	217	3	150	153
Himachal Pradesh	-	-	-	22	-16	7	-9
Jammu & Kashmir	-	-	-	40	-19	-50	-69
Tripura	-	-	-	23	1	29	30
Manipur	-	-	-	93	-1	49	48
Nagaland	-	-	-	84	2	90	92
Meghalaya	-	-	-	48	-1	29	28
Sikkim	-	-	-	31	-	17	17
GROUP D	-	-	-	40	-12	-1	-13
All States	-	-	-	259	40	188	228

Source : Reports of the Finance Commissions

Table 5 : Internal Debt of States Other Than Loans from the Centre

States	Internal Debt				Market Borrowings				Index Numbers (for all Plans)	
	IV	V	VI	All	IV	V	VI	All	Internal Debt	Market Borrowings
Punjab	46	93	65	204	23	31	10	64	287	121
Haryana	48	58	32	138	32	49	18	99	194	187
Maharashtra	27	34	12	73	20	28	11	59	103	111
Gujarat	35	44	19	98	27	36	14	77	138	145
West Bengal	21	24	19	64	14	17	6	37	90	70
GROUP A	30	40	22	92	21	28	11	60	130	113
Tamil Nadu	35	40	15	90	24	33	13	70	127	132
Kerala	31	35	22	88	16	28	16	60	124	113
Orissa	19	40	22	81	19	34	9	62	114	117
Assam	9	33	9	81	18	29	7	54	72	102
Karnataka	26	50	17	93	20	33	11	64	131	121
Andhra Pradesh	20	37	14	71	18	29	9	56	100	106
GROUP B	25	40	16	81	20	31	11	62	114	117
Uttar Pradesh	13	31	8	52	11	23	7	41	73	77
Rajasthan	16	52	17	85	22	43	14	79	120	149
Madhya Pradesh	17	18	8	43	11	12	4	27	61	51
Bihar	11	18	6	35	8	14	4	26	49	49
GROUP C	12	27	9	48	12	21	7	40	68	75
Himachal Pradesh	10	38	15	63	7	24	8	39	89	74
Jammu & Kashmir	13	25	10	48	12	23	5	40	68	75
Tripura	Neg.	79	41	120	-	53	22	75	169	142
Manipur	24	100	52	176	23	96	33	152	248	287
Nagaland	65	365	96	526	60	294	82	436	741	823
Meghalaya	25	76	30	131	22	63	22	107	185	202
Sikkim	-	31	25	38	-	-	-	-	54	-
GROUP D	14	60	25	99	13	47	15	75	139	142
All States	21	35	15	71	17	27	9	53	100	100

Note : Internal Debt includes market borrowings and loans received from financial institutions, commodity boards etc.

Table 6 : Plan Transfers, 1956-81

States	Rupees per Capita							Index Numbers						
	II	III	AP	IV	V	VI	All	II	III	AP	IV	V	VI	All
Punjab	51	62	45	72	149	64	443	170	107	110	82	104	80	101
Haryana	51	62	58	76	157	94	498	170	107	141	86	110	118	113
Maharashtra	23	42	28	47	89	62	291	77	72	68	53	62	78	66
Gujarat	31	54	36	58	114	62	355	103	93	88	66	80	78	81
West Bengal	28	45	32	48	104	57	314	93	78	78	55	73	71	71
GROUP A	31	48	34	54	108	63	338	103	83	83	61	76	79	77
Tamil Nadu	32	55	35	48	122	58	350	107	95	85	55	85	73	80
Kerala	28	72	52	80	145	68	445	93	124	127	91	101	85	101
Orissa	45	78	45	71	169	128	536	150	134	110	81	118	160	122
Assam	35	86	72	117	230	135	675	117	148	176	133	161	169	153
Karnataka	35	66	45	57	113	58	374	117	114	110	65	79	73	85
Andhra Pradesh	31	61	44	53	152	86	427	103	105	107	60	106	108	97
GROUP B	33	66	45	64	146	82	436	110	114	110	73	102	103	99
Uttar Pradesh	19	48	35	70	143	75	390	63	83	85	80	100	94	89
Rajasthan	37	80	58	112	145	19	451	123	138	142	127	101	24	103
Madhya Pradesh	37	68	43	83	114	89	434	123	117	105	94	80	111	99
Bihar	22	47	33	79	113	69	363	73	81	80	90	79	86	83
GROUP C	25	55	39	80	130	69	398	83	95	95	91	91	86	90
Himachal Pradesh	51	62	-	286	613	393	1405	170	107	-	325	429	491	319
Jammu & Kashmir	60	172	160	363	902	401	2058	200	297	390	413	631	501	468
Tripura	-	-	-	472	368	285	1125	-	-	-	536	257	356	256
Manipur	-	-	-	255	600	476	1331	-	-	-	290	420	595	303
Nagaland	35	209	388	759	1663	842	3896	117	360	946	863	1163	1053	885
Meghalaya	35	86	72	334	771	466	1764	117	148	176	380	539	582	401
Sikkim	-	-	-	-	2062	1209	3271	-	-	-	-	1442	1511	743
GROUP D	54	128	164	354	769	433	1902	180	221	400	402	538	541	432
All States	30	58	41	88	143	80	440	100	100	100	100	100	100	100

Notes and References

For Data on Plan transfers for the Second, Third and the three Annual Plan Periods, See "Distribution of Central Assistance for the Fourth Plan" - Paper submitted to the National Development Council at its meeting dated the 26th December 1970 - Statement III A quoted by Grewal, B.S. in "Centre-State Financial Relations in India", Punjab University 1975, p.235. Data for the Fourth Plan are taken from an unpublished document of the Planning Commission. For the Fifth and the Sixth Plans, data have been taken from "Finances of State Governments, RPI Bulletin, different issues.

Table 7.: Coefficients of Rank Correlation with per Capita State Income

	II	III	AP	IV	V	VI
Per Capita Aggregate Plan Transfers	0.111	-0.353	0.066	-0.315	-0.113	-0.354
Per Capita Plan Outlays	0.626	0.355	0.626	0.477	0.589	0.636
Proportion of Plan Transfers to State Plan Outlays	-0.438	-0.722	-0.700	-0.454	-0.679	-0.792
Per Capita States' Own Resources	0.802	0.690	0.593	0.654	0.769	0.754
Per Capita Revenue Surpluses under the awards of the Finance Commissions			0.586	0.857	1.0	0.521
Per Capita Overall Surpluses after Debt Relief awarded by Finance Commission					0.711	0.589
Per Capita Internal Debt				0.710	0.645	0.699
Per Capita Market Borrowings				0.526	0.505	0.610
Per Capita Direct Institutional Support to State Budgets				0.647	0.632	0.525

Notes :

1. Rank Correlation is worked out between Per Capita income at the beginning of the Plan Period (subject to the constraints imposed by the availability of data on Per Capita income) and financial flows during subsequent Plan Periods. Thus the coefficients for the second Plan is with Per Capita income of the year 1955-56 (NCAER estimate) for Third Plan with 1960-61 (CSO estimate) Annual Plans with 1964-65 Fourth Plan with 1968-69, fifth Plan with 1973-74 and Sixth Plan with 1975-76.
2. Due to difficulties in getting Per capita income data for all periods special category states have been excluded.
3. Values of coefficients above 0.524 are significant at 5% level and those above 0.687 are significant at 1% level.

Notes and References

1. Gadgil, D.R., "Some aspects of Centre-State Financial Relations" in ed., Kamat, A.R., Planning and Development, 1967-77, Gokhale Institute of Politics and Economics, Pune, 1973, p.339. Gadgil even suggested that the size of the Plan Outlays may be determined by the Finance Commissions.

2. Though Gadgil tried to provoke discussions on the principles to determine the Plan Outlays, his own formula related only to Plan assistance and was regressive as we see by the end of his paper.

3. Throughout this study the terms Plan transfers and Plan assistance are used to include only transfers to finance State Plans. It excludes transfer for Central and Centrally sponsored schemes.

4. Administrative Reforms Commission, Report of the Study Team on Financial Administration, Government of India, New Delhi, 1967, p.81.

5. ARC, Report of the Study Team on Centre-State Relationships, p.49.

6. Hanson, A.H., Process of Planning, Oxford University Press, London, 1968, p.321.

7. Ibid.

8. Summary record of the 24th Meeting of the National Development Council, 1-2, December 1967, quoted by Grewal, B.S., Centre-State Financial Relations in India, Punjab University, 1975.

9. Quoted by Chatterjee Amiya, The Central Financing of State Plans in the Indian Federation, U.K. Mukhopadhya, Calcutta, 1971, p.38.

10. Planning Commission, Third Five Year Plan, Government of India, New Delhi, (1960), p.60.

11. See (1) Reddy K.N., "Inter-State Tax Efforts", Economic and Political Weekly, Bombay 13 December 1975. (2) Hanumantha Rao, C.H., "Growth, Poverty and Tax Efforts", Institute of Economic Growth, Delhi. Rao has shown that 91% of the variation in per capita tax between different States is explained by the variation in per capita SDP. The degree of urbanisation is also a significant factor.

12. Raj Krishna, S., Note of Dissent, Report of the Seventh Finance Commission, Government of India, Delhi, 1978, p.146.

13. Reserve Bank of India, Report on Currency and Finance, 1980-81, Vol.II, Bombay, p.117.

14. The Economic Times, Bombay, January 2, 1979

15. 'Partners in Development' (Report of the Commission on International Development - Chairman, Lester B. Pearson), Pall Mall Press, London, 1969, p.385.

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TRANSFERS FROM THE CENTRE TO THE STATES IN INDIA

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The division of functions and resources in a federation like India, when based on efficiency and scientific considerations logically creates a gap between the revenue resources and requirements of the States. Such a situation arises because the States have dynamic and expanding functions but they are deprived of productive and elastic sources of revenue. The imbalance is, therefore, inherent[1] and cannot be corrected without resources being transferred to the States from the Centre. In India, resources are transferred to the States through two bodies: the Finance Commission and the Planning Commission. While the Finance Commission has a constitutional basis, the Planning Commission was appointed by a resolution of the Government of India in 1950. Although there are vast differences in their functioning, methods and approach, yet one fact remains common to both that they have been instrumental in transferring resources from the Centre to the States on a large scale. The Finance Commission makes its recommendations to the President regarding the distribution of taxes, which are to be, or may be, divided between the Union and the State Governments. In addition, it also makes its recommendations regarding grants-in-aid of revenues under Article 275 of the Constitution and on any other matter referred to it by the President.

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1 "A chronic gap between the own resources and expenditure potential of the States seems to be an inherent feature of all well-established federations", D.T. Lakdawala, Union-State Financial Relations, 1967, p.45.

Thus, the transfers through the Finance Commission have been effected under the category of tax-sharing and statutory and other grants. Loans and grants for Plan schemes as also for Central/ Centrally sponsored schemes are held outside its purview and are channelled to the States through the Planning Commission.

Table 1 shows that the total resources transferred from the Centre to the States increased from Rs.1431 crores in the First Plan to Rs.2868 crores in the Second Plan and further to Rs.5600 crores in the Third Plan. Thus the total resources transferred during the Second Plan were twice the resources transferred during the First Plan and the resources transferred during the Third Plan were almost twice the resources transferred during the Second Plan. The total resources transferred to the States in the Fourth Plan at Rs.15101 crores were more than two-and-a-half times of the resources transferred during the Third Plan Period. During the five years 1974-79, the total resources transferred from the Centre to States were as much as Rs.25,282 crores and now in a single year, for example in 1979-80 (Rs.8193 crores) and also in 1980-81 (Rs.8462 crores), the resources transferred exceed the total amount of resources transferred during the Third Plan period. It may, however, be pointed out that there is not much variation when these transfers are looked at as a percentage of States' total expenditure on revenue and capital account. This percentage increased from 42.7 in the First Plan to 52.2 in the Third Plan and further to 53.9 during the Annual Plans as shown in Table 1. Since then this percentage declined to 42.1 during the period 1974-79 but rose to 44.8 in 1979-80 (Revised) and declined again to 43.6 in 1980-81 (Budget). However, the fact remains that the States' fiscal dependence on the Centre has been increasing rapidly.

Table 1 also shows that loans have constitued a significant part of the total transfers. From the beginning of the First Plan and prior to 1979-80, the share of loans has exceeded the share of divisible taxes and duties in the total transfers. It was for the first time in 1979-80 (Revised) only that the share of divisible taxes and duties (40.8 per cent) exceeded the share of loans (31.7 per cent) in the total transfers. This is a happy development in the sphere of Indian federal finance because the receipts from the share of divisible taxes and duties are based on the recommendations of the Finance Commission and are given in aid of general revenues. They do not, therefore, compromise the fiscal independence of the States. The increasing share of divisible taxes and duties in the total transfers in future will be rejoiced by the States as it will strengthen their autonomy.

As referred to above, resources are transferred to the States by two bodies: the Finance Commission and the Planning Commission. Table 2 shows that upto the Annual Plans (1966-69), resources transferred through the Planning Commission exceeded the resources transferred by the Finance Commission. Table 2 also shows that during the First Plan, the Planning Commission's share in the total resources transferred to the States was as much as 61.5 per cent whereas that of the Finance Commission was only 31.2 per cent. The percentage share of the Planning Commission came down to 46.9 in the Second Plan but rose again to 48.9 in the Third Plan and stood at 35.9 during the Annual Plans. However, the fact remains that the Planning Commission had an upper hand over the Finance Commission and it controlled a substantial part of the total resources transferred to the States. The over-powering influence of the

Planning Commission in deciding Central assistance created a dilemma in the sphere of Indian federal finance because the assistance from the Planning Commission to the States, prior to the Fourth Plan, was not based on any objective criteria. Thus a substantial part of the resources was doled out to the States without any scientific considerations and political factors came out to dominate. The emergence of the Planning Commission as a significant body to transfer resources from the Centre to the States undermined the importance of the Finance Commission. Accordingly, the Third Finance Commission suggested that either the functions of the Finance Commission be enlarged "to embrace total financial assistance to be afforded to the States"[2] or "transform the Planning Commission into Finance Commission at the appropriate time."[3] It is a happy development that since the Fourth Plan the Finance Commission controls a relatively greater part of the resources transferred to the States and at present it controls almost 50 per cent of the total Central transfers. However, this does not solve the problem altogether because there is still scope for better functioning of the two bodies.

Whether the resouces are transferred to the States through the Finance Commission or the Planning Commission, one basic fact remains that the transfers must result in reduction of existing disparities among the States and help to develop faster the relatively backward States of the country. It is, however, unfortunate that the transfers to the States have not been effected on the basis of such scientific principles as could help in

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2 Report, 1961, pp.35-36.

3 Ibid., p.36.

achieving these objectives. As a result, the existing disparities between the States have tended to increase. In Table 3, in columns 1, 3 and 5 the States have been arranged in descending order of their per capita income in 1960-61, 1970-71 and 1979-80, respectively. In columns 2, 4 and 6, States are arranged in descending order of the per capita sums allocated to them out of the total resources transferred from the Centre in 1960-61, 1970-71 and 1980-81 (Budget), respectively. The Table shows that the poorest states have not received the largest per capita allocations out of total Central transfers. Punjab, the third richest in terms of per capita income, received the highest per capita allocation of total transfers (excluding Jammu & Kashmir in which case political factors also influence the decisions) at Rs.35.5 in 1960-61 while Bihar (Rs.14.3), the poorest State, ranked 13th in terms of per capita total transfers during that year. Similarly, Uttar Pradesh, which ranked 13th in terms of per capita income, stood lowest in terms of per capita total transfers at Rs.12.6. Similarly, the other relatively poorer States such as Orissa and Madhya Pradesh also received lower per capita total transfers as compared to the relatively better-off States such as Punjab and Gujarat. The Table also shows that West Bengal, which ranked second in terms of per capita income, was allocated a higher per capita assistance as compared to the backward States of Madhya Pradesh, Bihar and Uttar Pradesh. Similarly, Maharashtra, which stood first in terms of per capita income, received higher assistance than Bihar and Uttar Pradesh. Thus the relatively backward States of Bihar, Uttar Pradesh, Orissa and Madhya Pradesh were not getting their due share.

In 1970-71, the situation did not improve much. Punjab, the richest State in terms of per capital income, received per capita total transfers equal to that of Madhya Pradesh and higher than that of Bihar and Uttar Pradesh. Similarly, the developed States of West Bengal, Haryana, Gujarat and Maharashtra, which enjoyed quite a high rank in terms of per capita income, were allocated higher per capita total transfers as compared to the relatively backward States of Madhya Pradesh, Bihar and Uttar Pradesh.

In 1980-81 (Budget) also, Punjab (the richest State in terms of per capita income) was allocated higher per capita total transfers as compared to the relatively poorer States of Uttar Pradesh, Bihar and Rajasthan. Similarly, the other relatively better-off States, such as Haryana, Maharashtra and West Bengal received higher per capita total transfers as compared to the backward States of Uttar Pradesh, Bihar, Rajasthan and Kerala. Gujarat, with much higher per capita income, ranked third in terms of per capita total transfers. The need to allocate higher per capita total transfers to relatively backward States cannot be over-emphasised. Some of the poorer States, such as Bihar, Uttar Pradesh, Rajasthan and Kerala are not getting their due share. In order to strengthen the unity and integrity of the Indian federation it is not only desirable but almost inevitable that the assistance to these States must be increased.

It would also be worthwhile to examine separately the per capita transfers effected through the Finance Commission and the Planning Commission as it will enable us to find out whether

either of the agencies has been following scientific principles in their scheme of resource allocation among the States. Table 4 shows the per capita sums allocated to individual States through the Finance Commission. In the Table in columns 1, 3 and 5 States have been arranged in descending order or their per capita income in 1960-61, 1970-71 and 1979-80, respectively. In columns 2, 4 and 6 States have been arranged in descending order of per capita sums allocated to them through the share of Central divisible taxes and statutory grants in 1960-61, 1970-71 and 1980-81 (Budget), respectively. An examination of the Table shows that the poorest States have not got the highest per capita share in Central divisible taxes and statutory grants. Thus Punjab, the third richest State, received the highest (excluding Jammu & Kashmir) per capita grants and share in Central taxes. Bihar, the poorest State, received lower per capita grants and tax shares as compared to all other States excluding Tamil Nadu, Maharashtra and Uttar Pradesh. Gujarat, the fourth richest State, ranked fourth in terms of per capita grants and tax shares. West Bengal also received a higher per capita grants and tax shares as compared to many of the relatively backward States. Uttar Pradesh, which ranked thirteenth in terms of per capita income, received the lowest per capita grants and tax shares. Thus the poorer States of Bihar, Uttar Pradesh, Kerala and Madhya Pradesh were not getting their due share.

The situation slightly improved in 1970-71 when Punjab and Haryana received the lowest per capita grants and tax shares. However, Bihar, Madhya Pradesh and Uttar Pradesh were still lower in the ladder and were getting relatively smaller per capita grants

and tax shares as compared to relatively developed States of West Bengal, Maharashtra and Gujarat. We are happy to record that Bihar and Uttar Pradesh reached higher in the ladder in 1980-81 (Budget) when both of them got higher per capita grants and tax shares as compared to West Bengal, Gujarat, Maharashtra, Punjab and Haryana. It may, however, be emphasised that both the States are still not getting their due share. It may also be noted that Rajasthan, which has relatively lower per capita income, received the lowest per capita grants and tax shares. It is not only desirable but urgently required that the Finance Commission in future recommend devolution of taxes and grants on the basis of such scientific principles as may benefit the relatively backward states of Bihar, Uttar Pradesh and Rajasthan.

A major part of the grants (other than statutory grants) and loans are given to the States through the Planning Commission. An examination of such assistance shows that the relatively backward States have been left behind due to the absence of scientific and well-planned principles. Table 5 shows the per capita share of individual states in grants other than statutory. In the Table in columns 1, 3 and 5 States have been arranged in descending order of their per capita income and in colum 2, 4 and 6 States have been listed in descending order of per capita sums received by them through grants-in-aid other than statutory. In 1960-61, Punjab and Tamily Nadu (excluding Jammu & Kashmir) received highest per capita grants whereas the relatively backward States of Uttar Pradesh, Madhya Pradesh, Bihar, Orissa and Rajasthan received smaller per capita grants as compared to the better-off States, such as Tamil Nadu and Karnataka. In 1970-71 also, Bihar, Uttar Pradesh, Kerala, Orissa and Madhya Pradesh got smaller

per capita grants as compared to the relatively developed States of Gujarat, Punjab and Haryana. The situation did not improve much even in 1980-81 (Budget) except that Orissa and Madhya Pradesh reached higher in the ladder but the poorer States of Bihar, Uttar Pradesh and Kerala received smaller grants as compared to the developed States of Gujarat, Punjab and Haryana. It may also be noted that Maharashtra, which ranks second in terms of per capita income, received higher per capita grants than Bihar and Kerala. Once again, the need to increase Central assistance to the relatively backward States, whose needs are greater but find it difficult to raise sufficient resources, cannot be stressed for the smooth functioning of the federation and broader national interest.

Per capita Central loans to individual States have been shown in Table 6. In the Table in column 1, 3 and 5 States have been listed in descending order of their per capita income in 1960-61, 1970-71 and 1979-80, respectively. In column 2, 4 and 6 States have been arranged in descending order of per capita Central loans in 1960-61, 1970-71 and 1980-81 (Budget), respectively. The Table shows that Punjab (excluding Jammu & Kashmir) received the highest per capita Central loans in 1960-61. The relatively backward States of Uttar Pradesh, Bihar, Madhya Pradesh and Orissa got smaller per capita loans as compared to the advanced States of Maharashtra and Gujarat. The relatively developed State of West Bengal received higher per capita loans as compared to Madhya Pradesh, Bihar and Uttar Pradesh. The situation slightly improved in 1970-71. Still, Haryana and West Bengal were getting higher per capita loans as compared to Kerala, Orissa, Bihar, Madhya Pradesh and Uttar Pradesh. Maharashtra was also getting a higher

per capita loans as compared to Bihar, Madhya Pradesh and Uttar Pradesh. Uttar Pradesh received the lowest per capita loans so also Madhya Pradesh received much smaller per capita loans. The situation deteriorated in 1980-81 (Budget) when relatively developed States of Punjab, Gujarat, West Bengal and Maharashtra received higher per capita loans than Madhya Pradesh, Bihar, Uttar Pradesh, Andhra Pradesh, Rajasthan and Kerala. The relatively backward States of Bihar, Uttar Pradesh, Rajasthan and Kerala received lower per capita loans as compared to the developed State of Haryana.

The above discussion leads to the inescapable conclusion that the different forms in which resources are transferred from the Centre to the States either through the Finance Commission or the Planning Commission have the unfortunate consequence that the relatively backward States continue to be underdeveloped and the levels of existing disparities have not been reduced in the desirable manner. It is depressing to note that Bihar continues to have the lowest per capita income and Uttar Pradesh, whose per capita income was 5 per cent above the all-India average in 1950-51 (the last year of the pre-Plan period) has a level of per capita income at present which is about 24 per cent lower than the all-India average. The obvious answer to such a state of affairs lies in pursuing wrong criteria for allocation of resources among the States.

So far as the Finance Commission is concerned, it has followed different criteria for devolution of taxes and grants-in-aid among the States. The working of the past Finance Commissions shows that

population has been used as the main criterion for distributing the proceeds of income-tax and Union duties of excise.[4] The Seventh Finance Commission in its efforts to place the financially weaker States on a better footing though that it would be desirable to adopt the "overall indicators of backwardness...instead of partial indicators."[5] Accordingly, the Commission gave equal weightage of 25 per cent to population, the inverse of the per capita State domestic Product, percentage of the poor in each State to its total population and a formula for revenue equalisation, in the distribution of the much enlarged divisible pool of union excise duties. It is, however, not understandable as to why the Commission did not adopt the same principles for the distribution of divisible pool of income-tax if it really wanted to favour the less-developed States. Also why the Commission did not give a greater weightage to States' per capita income rather than taking into account the 'poverty ratio' of the States for the purpose. The criterion of 'poverty ratio' need not necessarily benefit the relatively backward States as it shows the level of income distribution and it is quite possible that a State with higher per capita income has a higher poverty ratio because of great disparities in the distribution of income. The poverty ratios in the case of relatively better-off States, such as West Bengal and Tamil Nadu, are higher as compared to the relatively backward States of Madhya Pradesh, Orissa, Rajasthan and Kerala. Maharashtra

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4 A study by the National Institute of Public Finance and Policy concluded that during 1962-63 to 1973-74 (the period covered by the awards of the Third, Fourth and Fifth Finance Commission), population could explain between 92 per cent to 97 per cent of the variations in tax share percentages, thus stating the fact that taxes are devolved on the basis of population.

5 Report (1978), p.86.

has also higher poverty ratio as compared to the poorer States of Orissa, Rajasthan and Kerala. Under such a situation the very objective of taking poverty ratio as a basis for distribution is defeated.

It may also be emphasised here that for a long time budgetary deficit of the States on a standardised basis has become the main basis of grants-in-aid recommended by the Finance Commission. Under such a situation, States with high levels of expenditure or relatively low levels of taxation would get grants irrespective of their economic strnegth. Though the principles such as tax effort and economy in expenditures have been approved by the successive Finance Commissions but, in fact none put them into practice satisfactorily. It may be pointed out here that the Sixth Finance Commission, rather than improving upon the effort index initiated by the Fifth Finance Commission, ignored it on the ground that a formula based on relative tax effort "would place at a disadvantage some of the States faced with big gaps on non-Plan revenue accounts."[6] The Seventh Finance Commission observed that "we have taken into account the tax effort of the States and the returns which prudent management of public enterprises should fetch to the State Governments."[7] It may be pointed out here that lot of inequity arises if uniformity is insisted upon all the States regarding their performance or returns on investment in irrigation, transport and power projects. However, the Seventh Finance Commission seems to have done exactly this when it insisted that receipts from multi-purpose, major and medium schemes "should not only cover working expenses but also provide a

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6 Report of the Finance Commission, 1973, p.52.

7 Report (1978), op.cit., p.77.

return by way of interest of 1 per cent of the total capital invested by the States at the end of 1978-79...."[8]

The budgetary gap has thus been the bedrock of statutory grants and almost all the Commissions have adopted a gap filling approach, although each Finance Commission has disclaimed a mechanical approach of gap filling. It may be emphasised here that despite the claim of the Sixth Finance Commission that they "have not adopted the approach of mechanical filling up of the gap between receipts and expenditure..."[9], the importance of the concept of 'budgetary equilibrium' could not be discarded altogether by them. With the result, the revenue surpluses of backward States were adjusted against the provision of funds earmarked for upgradation of the standards of essential administrative and social services. Thus, Madhya Pradesh did not receive any grant as it was estimated to have revenue surplus of Rs.110.18 crores.

As a result of gap filling approach adopted by the successive Finance Commissions, we find that the relatively backward State of Uttar Pradesh would qualify for a grant, under article 275(i) of the Constitution, only under the awards of the Sixth Finance Commission. Similarly, Bihar, the poorest State, did not get any grant from the Fourth, Fifth and Seventh Finance Commissions under article 275(i) of the Constitution. The surpluses arising in the case of these States are due to their inability to provide services at adequate levels, in comparison with other States.

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8 Ibid., p.23.

9. Report (1973), op.cit., p.67.

The Plan assistance to the States through the Planning Commission is also not based on systematic and planned principles. Central assistance to the States, through the Planning Commission, is given for the States' own schemes decided on the basis of the gap between the States' own resources and the size of the Plan determined by the Planning Commission as also for schemes sponsored by the Centre which are wholly or partly financed by it. Prior to the Fourth Plan, while there was an agreed ceiling on aggregate Central assistance for State Plans, plan assistance was given on a schematic basis. In the beginning, the assistance was based on very detailed schemes and its quantum varied from scheme to scheme, differed within a scheme for different types of expenditure and in some cases changed from year to year. The conditions and the composition of grants and loans also varied with the detailed nature of expenditure. If there was a difference between the total approved Central assistance to a State and the money earned by it on a schematic basis, the difference was given in the form of a miscellaneous loan. "This formula was found to leave great scope for political pressures and bargining; it was found that the richer States got more of their assistance in the form of grants than the poorer ones."[10]

The schematic pattern of assistance suffered from many defects. The States took up schemes, without careful planning and scrutiny, as and when the Central assistance was offered to them. The State Governments, though supposed to be better equipped with local needs, resources and limitations, gave little thought to the suitability

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10 D.T. Lakdawala, "Centre-State Financial Relations", in Centre-State Financial Relations (papers read at the Indian Economic Conference, Bodh Gaya, 1972) published by Popular Prakashan, Bombay, p.viii.

of schemes. In order to get more assistance, they cut down their expenditure on non-scheme items which would have been more productive to them. Under the situation, "it appears that in the initial years of planning, there were many complications in regard to the enumeration of schemes and determination of the quantum of assistance, and also there was confusion and delay in regard to the disbursement of the grants to the States."[11]

As the assistance was largely given on the matching principle, it went against the interest of relatively backward States. The relatively better-off States, being in a position to raise large resources, could better match their resources to qualify for the grant. In addition, such States were in a position to draw a better Plan because of their better administration. The Second Finance Commission criticised the system of matching grants and pointed out that "The State Governments were unable to meet their share of the expenditure on these schemes as all the resources had already been committed for their inescapable expenditure for the implementation of the Plan. Their difficulty was greater in the case of schemes outside the Plan."[12] The system of matching grants cannot be justified as it would normally go against the interest of backward regions and favour the relatively better-off States which can easily qualify for Central assistance and utilise matching grants to a greater extent because of their better financial position.[13]

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11 G. Thimmaiah, "Plan Grants in India - A Critical Evaluation", The Indian Journal of Public Administration, Vol.XXII, No.2, April-June, 1976, p.241.

12 Report (1957), p.68.

13 "The richer States like Maharashtra, Gujarat got more outright grants. This was not merely because of cleverer people in the Secretariat. It was because they had resources which they could employ in such a manner that they could get to that position". D.R. Gadgil, in a booklet entitled Formulating Our Plans, based on an address given in Ahmedabad on November 24, 1968, under the auspices of the Ahmedabad Management Association.

The State Governments have been insisting from time to time that Central assistance be based on certain objective criteria. The Planning Commission, with the assistance of National Developmental Council, divised a new formula for distribution of Plan assistance among States other than Assam, Nagaland and Jammu & Kashmir. In terms of this formula from 1969-70, 30% of the assistance is made in terms of grants and 70% in terms of loans.

Under the existing arrangement in force since 1969-70, the total resources thus allocated to a State are determined in terms of 60% on the basis of population, 10% on the basis of per capita tax effort, 10% on the basis of continuing major and medium irrigation and power projects, 10% on the basis of special problems (such as floods, chronically drought affected areas and tribal areas) of individual States and 10 per cent (raised to 20 per cent from 1980 when the weightage of 10 per cent given to the continuing irrigation and power schemes was abolished) was to accrue to the poorer States with per capita incomes below the all-India average, i.e., on the basis of economic backwardness. As a result of this arrangement, popularly known as Gadgil formula, Central assistance to States has been made on certain rational criteria. The earlier system of tying Plan grants to specific projects and matching assistance has almost been given up. However, the States are not satisfied with the allocation of Plan resources in terms of the Gadgil formula. Ten per cent (now 20 per cent) specially set apart for the poorer States was a welcome feature but it did not take into account the past progress made by the States as a result of the expenditure for which an allowance had already been made by the Finance Commission. Poor States also lose when tax effort is

judged as a proportion of revenue to State income because with the same level of taxation they cannot in terms of percentages of their incomes collect the same amount of tax revenues as the relatively better-off States can do.

The loan content of the Plan assistance needs a more radical reorganisation. The States feel that the allocation of 70 per cent of the resources on the basis of loans places an unduly large burden on them. It is this arrangement which has led to the present situation of States' indebtedness. Accordingly, the States feel that the proportion of grants should be increased and that of the loans reduced in the total Plan assistance. This needs to be examined.

It is a happy situation that in recent years the Planning Commission has attempted to benefit relatively more to the backward States. From 1979 the Commission has adopted the IATP formula for a substantial part of plan assistance and utilised the discretionary assistance for the benefit of relatively backward States. Since 1980, the Gadgil formula has also been modified in favour of the poor States. The weightage of 10 per cent given to the continuing major and medium irrigation and power projects has been abolished and the States with per capita income below the national average qualify for 20 per cent assistance on that basis instead of the earlier 10 per cent.

A bias in favour of the relatively backward States during recer years is a welcome development. "However, for major States as a whole the formula of Plan assistance worked unevenly and unjustly

in some cases."[14] It may also be emphasised here that centrally sponsored schemes (not bound by the Gadgil assistance formula) could be used to benefit the relatively backward States. The States in general welcomed these shcmes because they got the share in the scheme, in addition to the agreed plan assistance. However, an examination of the per capita State-wise expenditure on Centrally sponsored schemes during 1974-78 shows that the relatively developed States have benefited more. The per capita expenditure on these schemes was highest in the case of Gujarat (Rs.45.2) during the period followed by Haryana (Rs.44.3). The per capita expenditure in the case of Punjab (Rs.35.0) and Maharashtra (Rs.33.1) was also higher as compared to the relatively backward States of Bihar (Rs.16.9), Uttar Pradesh (Rs.22.0), Kerala (Rs.25.3), Madhya Pradesh (32.0) and Orissa (Rs.32.9). While the relatively developed States benefited more because of their better resource base, better administration and greater knowledge; it is, however, unfortunate that in many cases the Central parental departments hardly cared about which States benefited from their schemes. The decision to curtail these schemes and the sums thus saved to be distributed on a more progressive basis was a step in the right direction.

As things stand, States get assistance from different bodies in different forms and on the basis of different criteria. Prior to the commencement of Planning, assistance was given to the States under Articles 270 and 272 of the Constitution through sharing of income tax and Union excise duties, respectively. Grants in lieu

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14 Professor D.T. Lakdawala in his key note address to the Seminar on "Fiscal Re-adjustment and the Finance Commission" held at the Department of Economics, Lucknow University, in February, 1983 (Mimeo).

of jute export duty and general grants-in-aid were given under Articles 273 and 275, respectively. If revenue sharing would have continued as the principal method of transferring funds from the Centre to the States and grants-in-aid were used as a residual method, there would have been no difficulties in the Union-State financial relations. However, during the planning era Central grants to the States "made for a public purpose" under Article 282 of the Constitution, on the recommendations of the Planning Commission, have become more important in quantum and nature than the grants made under Article 275 on the recommendations of the Finance Commission. In addition, there is no appropriate forum where it could be examined whether the total assistance given to the States conforms to any objective criteria. Under such a situation, the State Governments often take advantage by presenting different estimates of their resources before the Planning Commission and the Finance Commission. This creates unnecessar duplication and conflict in the working of the two bodies.[15] The recent innovation of associating a member of the Planning Commission with the Finance Commission as was done by the Sixth Finance Commission and continued by the Seventh and Eighth Finance Commissions is a step in the right direction but the fact remains that the overriding importance of the Planning Commission in deciding Central assistance to the States defeated the intentions of the Constitution

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15 The Sixth Finance Commission (1973) rightly obtained from the Planning Commission the forecasts submitted by the States of receipts and expenditure for the Fifth Plan period.

While the Planning Commission provides increasingly large assistance to the States, it should equally be concerned with the utilisation of these funds. It must ensure whether the funds have been utilised for the purpose for which they were sanctioned and whether the States adhere to the schedule agreed to in the Plan so that the projects are completed in time. In the biginning, this job of monitoring the work of the Plan was entrusted to the advisers in the Commission. The Commission has at present 18 advisers as compared with a mere three in 1952.[16] These advisers are expected to visit the States or the areas allotted to them and closely follow the progress of the programmes. They are also expected to help the States tc find solutions to problems, if any. These advisers are supposed to be a link between the commission and the projects. However, from the very beginning this arrangement did not make a dent in the problem of the implementation of the Plan due to the quick transfer of these advisers and the long delay in their replacement and appointment brought the scheme into disuse. After the death of Pt. Nehru, the practice was almost given up and the visits by advisers, if at all, became a thing of the past. Moreover, the States also felt it as an infringement of their autonomy. The timely implementation of Plan is still a mirage with no concrete inbuilt device to ensure progress of various programmes. The Planning Commission should, therefore, seriously ponder over this aspect and devise suitable measures to ensure the implementation of Plan programmes by the States in time. This is essential because the formulation of the Plan and its implementation should be the primary duty of the Planning Commission.

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16 See A.N. Prabhu, "Role of Planning Commission", The Economic Times, March 30, 1981.

An acceptable dichotomy of functions between the Finance Commission and the Planning Commission is urgently needed. The Planning Commission should be entrusted with the task of formulating national Plans and devise such mechanism as may ensure the implementation of various Plan programmes in time. In doing so, the Commission should find out the scope of mobilisation of resources by the Union and State Governments. It should also make a survey of the natural resources of different parts of the country. Having assessed the potentiality of financial and physical resources, it should draw out the national Plan and specify State components in it. The Planning process should become as non-political as possible. The States implementing the Plan programmes in time should be suitably rewarded. This will inspire other States to follow suit.

The total assistance to be provided to the States, whether by way of tax-sharing, grants-in-aid or loans, should be placed at the disposal of the Finance Commission. This will enlarge the scope of the Finance Commission without there being any encroachment on the functions of the Planning Commission whose real task, under the new set-up, will be to formulate national Plans and devise ways for the implementation of Plan programmes, as referred to above. The Finance Commission will take the Plans as given and allocate resources among States, under different forms, on such scientific basis as may help to achieve the Plan objectives drawn out by the Planning Commission. To assess the implementation of the Plan programmes as also to ensure the proper utilisation of funds by different State Governments, the Planning Commission will visit the States from time to time and submit its

reports periodically to the Finance Commission which will make use of this information subsequently at the time of allocating funds to the States. Alternatively, there may be common meetings, once a year at least, of the Planning Commission and the Finance Commission to ensure coordination in their working.

It is also suggested that the Finance Commission be made a continuing body with the provision that each year one member will retire. This arrangement will allow fresh blood to enter and at the same time prevent any vested interests being established as all the members of the Commission will be changed in five years. A continuing Finance Commission will also have the advantage of learning by experience as a permanent Commission would do. It will get an opportunity to review the finances of Union and State Governments in continuity in the context of national goals to be achieved.

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Table 1

Resources transferred from the Centre to the States (Crores of Rs.)

	Share in Taxes (1)	Grants (2)	Loans (3)	Total (4)	Total Expenditure of the State Governments (5)	(4) as percentage of (5) (6)
First Plan (1951-56)	344 (24.0)	288 (20.1)	799 (55.9)	1431 (100.0)	3352	42.7
Second Plan (1956-61)	668 (23.3)	789 (27.5)	1411 (49.2)	2868 (100.0)	5846	49.1
Third Plan (1961-66)	1196 (21.4)	1304 (23.3)	3100 (55.3)	5600 (100.0)	10720	52.2
Annual Plans (1966-69)	1282 (24.0)	1389 (26.0)	2676 (50.0)	5347 (100.0)	9912	53.9
Fourth Plan (1969-74)	4562 (30.2)	3831 (25.4)	6708 (44.4)	15101 (100.0)	28551	52.9
Fifth Plan* (1974-79)	8337 (33.0)	8135 (32.2)	8810 (34.8)	25282 (100.0)	60081	42.1
1979-80 (Revised)	3346 (40.8)	2254 (27.5)	2593 (31.7)	8193 (100.0)	18272	44.8
1980-81 (Budget)	3633 (42.9)	2277 (26.9)	2552 (30.2)	8462 (100.0)	19409	43.6

* The Fifth Five-Year Plan, in fact, terminated one year earlier, i.e. on 31st March, 1978.

Note : Figures in brackets indicate the percentages to the total.

Table 2

Resources transferred to the States (Crores of Rs.)

	Resources transferred through		Other Transfers	Total
	Finance Commission	Planning Commission		
First Plan (1951-56)	447 (31.2)	880 (61.5)	104 (7.3)	1431 (100.0)
Second Plan (1956-61)	918 (32.0)	1344 (46.9)	606 (21.1)	2868 (100.0)
Third Plan (1961-66)	1590 (28.4)	2738 (48.9)	1272 (22.7)	5600 (100.0)
Annual Plans (1966-69)	1782 (33.3)	1917 (35.9)	1648 (30.8)	5347 (100.0)
Fourth Plan (1969-74)	5421 (35.9)	4731 (31.3)	4949 (32.8)	15101 (100.0)
Fifth Plan* (1974-79)	11168 (44.2)	10353 (40.9)	3761 (14.9)	25282 (100.0)
1979-80 (Revised)	3888 (47.5)	3408 (41.6)	897 (10.9)	8193 (100.0)
1980-81 (Budget)	4210 (49.8)	3432 (40.5)	820 (9.7)	8462 (100.0)

* Fifth Five-Year Plan, in fact, terminated one year earlier, i.e. on 31st March, 1978.

Note : Figures in brackets indicate the percentages to the total.

Table 3 : Per capita share of Individual States in total Transfers from the Centre (Rs.)

States in descending order of per capita income (in 1960-61)	States in descending order of per capita total transfers (1960-61)	States in descending order or per capita income (in 1970-71)	States in descending order of per capita total transfers (1970-71)	States in descending order or per capita income (in 1979-80)	States in descending order of per capita total transfers (1980-81 Budget)
1	2	3	4	5	6
1. Maharashtra	1. Jammu & Kashmir (67.4)	1. Punjab	1. Jammu & Kashmir (159.3)	1. Punjab	1. Jammu & Kashmir (494.3)
2. West Bengal	2. Punjab* (35.5)	2. Haryana	2. Assam (100.7)	2. Maharash-tra	2. Orissa (181.7)
3. Punjab	3. Rajasthan (22.4)	3. Gujarat	3. Rajasthan (84.0)	3. Haryana	3. Gujarat (137.2)
4. Gujarat	4. Assam (20.4)	4. Maharashtra	4. Orissa (60.8)	4. Gujarat	4. Assam (132.4)
5. Tamil Nadu	5. Kerala (18.8)	5. West Bengal	5. Kerala (54.6)	5. West Bengal	5. Madhya Pradesh (131.7)
6. Assam	6. Gujarat (18.6)	6. Karnataka	6. West Bengal (53.0)	6. Tamil Nadu	6. Punjab (117.6)
7. Karnataka	7. Andhra Pradesh (17.8)	7. Rajasthan	7. Haryana (50.5)	7. Jammu & Kashmir	7. Haryana (116.4)
8. Rajasthan	8. Orissa (17.3)	8. Tamil Nadu	8. Andhra Pradesh (44.3)	8. Kanataka	8. Mahara-shtra (115.5)
9. Andhra Pradesh	9. Karnataka (16.8)	9. Andhra Pradesh	9. Karnataka (44.3)	9. Andhra Pradesh	9. West Ben-gal (114.7)
10. Jammu & Kashmir	10. West Beng-al (16.0)	10. Kerala	10. Gujarat (41.2)	10. Kerala	10. Uttar Pradesh (108.8)
11. Madhya Pradesh	11. Madhya Pradesh (15.3)	11. Assam	11. Maharashtra (38.7)	11. Assam	11. Bihar (108.0)
12. Kerala	12. Mahara-shtra (14.5)	12. Jammu & Kashmir	12. Madhya Pradesh (37.5)	12. Rajasthan	12. Andhra Pradesh (103.5)
13. Uttar Pradesh	13. Bihar (14.3)	13. Madhya Pradesh	13. Punjab (37.5)	13. Uttar Pradesh	13. Karnataka (102.6)
14. Orissa	14. Tamil Nadu (13.9)	14. Uttar Pra-desh	14. Bihar (36.4)	14. Madhya Pradesh	14. Tamil Nadu (100.9)
15. Bihar	15. Uttar Pradesh (12.6)	15. Orissa	15. Uttar Pradesh (35.2)	15. Orissa	15. Rajasthan (98.9)
		16. Bihar	16. Tamil Nadu (34.0)	16. Bihar	16. Kerala (94.4)

* Including Haryana

Note: The six States of Himachal Pradesh, Manipur, Meghalaya, Nagaland, Sikkim and Tripura have not been included in the Table as they are relatively new States; at least three of them (Manipur, Meghalaya and Tripura) were Union Territories till 1971. The high dispensations to them and to Assam as also to Jammu and Kashmir are on account of extra-ordinary criteria rather than on the basis of their backwardness alo

Table 4 : Per capita share of Individual States in Statutory Grants and Central Divisible Taxes (Rs.)

States in descending order of per capita income (in 1960-61)	States in descending order of per capita grant and tax shares (1960-61)	States in descending order of per capita income (in 1970-71)	States in descending order of per capita grants and tax shares (1970-71)	States in descending order of per capita income (in 1979-80)	States in Descending order of per capita grant and tax shares (1980-81 Budget)
1. Maharashtra	1. Jammu & Kashmir (14.4)	1. Punjab	1. Jammu & Kashmir (61.8)	1. Punjab	1. Jammu & Kashmir (139.4)
2. West Bengal	2. Punjab* (10.2)	2. Haryana	2. Assam (30.8)	2. Maharashtra	2. Orissa (72.2)
3. Punjab	3. Assam (10.0)	3. Gujarat	3. Orissa (29.4)	3. Haryana	3. Tamil Nadu (57.4)
4. Gujarat	4. Gujarat (8.5)	4. Maharashtra	4. Kerala (22.4)	4. Gujarat	4. Madhya Pradesh (57.4)
5. Tamil Nadu	5. West Bengal (6.7)	5. West Bengal	5. West Bengal (21.8)	5. West Bengal	5. Kerala (56.2)
6. Assam	6. Karnataka (6.4)	6. Karnataka	6. Rajasthan (21.6)	6. Tamil Nadu	6. Bihar (56.1)
7. Karnataka	7. Orissa (6.4)	7. Rajasthan	7. Maharashtra (18.8)	7. Jammu & Kashmir	7. Uttar Pradesh (55.9)
8. Rajasthan	8. Andhra Pradesh (5.4)	8. Tamil Nadu	8. Gujarat (16.9)	8. Karnataka	8. West Bengal (54.4)
9. Andhra Pradesh	9. Madhya Pradesh (5.3)	9. Andhra Pradesh	9. Karnataka (16.8)	9. Andhra Pradesh	9. Gujarat (53.5)
10. Jammu & Kashmir	10. Rajasthan (5.2)	10. Kerala	10. Bihar (16.8)	10. Kerala	10. Andhra Pradesh (51.5)
11. Madhya Pradesh	11. Kerala (4.7)	11. Assam	11. Tamil Nadu (16.3)	11. Assam	11. Maharashtra (51.4)
12. Kerala	12. Bihar (4.6)	12. Jammu & Kashmir	12. Madhya Pradesh (16.1)	12. Rajasthan	12. Karnataka (50.5)
13. Uttar Pradesh	13. Tamil Nadu (4.4)	13. Madhya Pradesh	13. Uttar Pradesh (16.1)	13. Uttar Pradesh	13. Assam (45.8)
14. Orissa	14. Maharashtra (4.1)	14. Uttar Pradesh	14. Andhra Pradesh (15.3)	14. Madhya Pradesh	14. Punjab (44.5)
15. Bihar	15. Uttar Pradesh (4.0)	15. Orissa	15. Punjab (15.1)	15. Orissa	15. Haryana (44.4)
		16. Bihar	16. Haryana (15.1)	16. Bihar	16. Rajasthan (39.3)

* Including Haryana

Note: The six states of Himachal Pradesh, Manipur, Meghalaya, Nagaland, Sikkim and Tripura have not been included in the Table as they are relatively new States; at least three of them (Manipur, Meghalaya and Tripura) were Union Territories till 1971. The high dispensations to them and to Assam as also to Jammu & Kashmir are on account of extra-ordinary criteria rather than on the basis of their backwardness alone.

Table 5 : Per Capita share of Individual States in Grants other than Statutory (Rs.)

States in descending order of per capita income (in 1960-61)	States in descending order of per capita grants (1960-61)	States in descending order of per capita income (in 1970-71)	States in descending order of per capita grants (1970-71)	States in descending order of per capita income (in 1979-80)	States in descending order of per capita grants (1980-81 Budget)
1. Maharashtra	1. Jammu & Kashmir (8.3)	1. Punjab	1. Jammu & Kashmir (42.6)	1. Punjab	1. Jammu & Kashmir (129.0)
2. West Bengal	2. Punjab* (5.5)	2. Haryana	2. Assam (25.7)	2. Maharashtra	2. Orissa (56.5)
3. Punjab	3. Tamil Nadu (4.1)	3. Gujarat	3. Rajasthan (16.5)	3. Haryana	3. Madhya Pradesh (38.0)
4. Gujarat	4. Karnataka (3.6)	4. Maharashtra	4. Gujarat (12.1)	4. Gujarat	4. Gujarat (37.5)
5. Tamil Nadu	5. Orissa (3.4)	5. West Bengal	5. Punjab (11.0)	5. West Bengal	5. Haryana (36.7)
6. Assam	6. Assam (3.2)	6. Karnataka	6. Haryana (10.8)	6. Tamil Nadu	6. Assam (34.3)
7. Karnataka	7. Bihar (3.2)	7. Rajasthan	7. Madhya Pradesh (9.9)	7. Jammu & Kashmir	7. Rajasthan (33.4)
8. Rajasthan	8. Kerala (3.2)	8. Tamil Nadu	8. Orissa (8.9)	8. Karnataka	8. Punjab (24.0)
9. Andhra Pradesh	9. Rajasthan (3.0)	9. Andhra Pradesh	9. Kerala (8.2)	9. Andhra Pradesh	9. Uttar Pradesh (21.5)
10. Jammu & Kashmir	10. Uttar Pradesh (2.9)	10. Kerala	10. Uttar Pradesh (8.1)	10. Kerala	10. Andhra Pradesh (21.3)
11. Madhya Pradesh	11. Madhya Pradesh (2.8)	11. Assam	11. Bihar (7.4)	11. Assam	11. Karnataka (20.9)
12. Kerala	12. Andhra Pradesh (2.5)	12. Jammu & Kashmir	12. West Bengal (7.1)	12. Rajasthan	12. Maharashtra (20.8)
13. Uttar Pradesh	13. Maharashtra (2.4)	13. Madhya Pradesh	13. Maharashtra (6.8)	13. Uttar Pradesh	13. Bihar (20.2)
14. Orissa	14. Gujarat (2.2)	14. Uttar Pradesh	14. Karnataka (6.0)	14. Madhya Pradesh	14. Kerala (15.4)
15. Bihar	15. West Bengal (2.0)	15. Orissa	15. Andhra Pradesh (5.9)	15. Orissa	15. West Bengal (15.2)
		16. Bihar	16. Tamil Nadu (5.2)	16. Bihar	16. Tamil Nadu (13.9)

* Including Haryana

Note: The six States of Himachal Pradesh, Manipur, Meghalaya, Nagaland, Sikkim and Tripura have not been included in the Table as they are relatively new States; at least three of them (Manipur, Mechalaya and Tripura) were Union Territories till 1971. The high dispensations to them and to Assam as also to Jammu & Kashmir are on account of extra-ordinary criteria rather than on the basis of their backwardness alone.

Table 6 : Per capita Central Government Loans to Individual States (Rs.)

States in descending order of per capita income (in 1960-61)	States in descending order of per capita loans (1960-61)	States in descending order of per capita income (in 1970-71)	States in descending order of per capita loans (1970-71)	States in descending order of per capita income (in 1979-80)	States in decending order of per capita loans (1980-81 Budget)
1. Maharashtra	1. Jammu & Kashmir (44.7)	1. Punjab	1. Jammu & Kashmir (54.9)	1. Punjab	1. Jammu & Kashmir (225.9)
2. West Bengal	2. Punjab* (19.8)	2. Haryana	2. Rajasthan (45.9)	2. Maharashtra	2. Orissa (53.0)
3. Punjab	3. Rajasthan (14.2)	3. Gujarat	3. Assam (44.2)	3. Haryana	3. Assam (52.3)
4. Gujarat	4. Kerala (10.9)	4. Maharashtra	4. Haryana (24.7)	4. Gujarat	4. Punjab (49.1)
5. Tamil Nadu	5. Andhra Pradesh (9.9)	5. West Bengal	5. Andhra Pradesh (24.6)	5. West Bengal	5. Gujarat (46.2)
6. Assam	6. Maharashtra (8.0)	6. Karnataka	6. West Bengal (24.1)	6. Tamil Nadu	6. West Bengal (45.1)
7. Karnataka	7. Gujarat (7.9)	7. Rajasthan	7. Kerala (24.0)	7. Jammu & Kashmir	7. Maharashtra (43.3)
8. Rajasthan	8. Orissa (7.5)	8. Tamil Nadu	8. Orissa (22.5)	8. Karnataka	8. Madhya Pradesh (36.3)
9. Andhra Pradesh	9. West Bengal (7.3)	9. Andhra Pradesh	9. Karnataka (21.5)	9. Andhra Pradesh	9. Haryana (35.3)
10. Jammu & Kashmir	10. Assam (7.2)	10. Kerala	10. Maharashtra (13.1)	10. Kerala	10. Bihar (31.7)
11. Madhya Pradesh	11. Madhya Pradesh (7.2)	11. Assam	11. Tamil Nadu (12.5)	11. Assam	11. Uttar Pradesh (31.4)
12. Kerala	12. Karnataka (6.8)	12. Jammu & Kashmir	12. Bihar (12.2)	12. Rajasthan	12. Karnataka (31.2)
13. Uttar Pradesh	13. Bihar (6.5)	13. Madhya Pradesh	13. Gujarat (12.2)	13. Uttar Pradesh	13. Andhra Pradesh (30.7)
14. Orissa	14. Uttar Pradesh (5.7)	14. Uttar Pradesh	14. Madhya Pradesh (11.5)	14. Madhya Pradesh	14. Tamil Nadu (29.6)
15. Bihar	15. Tamil Nadu (5.4)	15. Orissa	15. Punjab (11.4)	15. Orissa	15. Rajasthan (26.2)
		16. Bihar	16. Uttar Pradesh (11.0)	16. Bihar	16. Kerala (22.8)

* Including Haryana

Note: The six States of Himachal Pradesh, Manipur, Mechalaya, Nagaland, Sikkim and Tripura have not been included in the Table as they are relatively new States; at least three of them (Manipur, Meghalaya and Tripura) were Union Territories till 1971. The high dispensations to them and to Assam as also to Jammu & Kashmir are on account of Extra-ordinary criteria rather than on the basis of their backwardness alone.

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'Financing of the States' Plans: A Perspective on Regional Development'

M.M. Ansari

One of the major objectives of the National Development Council(NDC) has been to' ensure the fullest development of the less advanced regions' with a view to minimising the inter-regional disparities in income, incidence of poverty and essential social services across the federation. The main rationale behind the aim of reducing socio-economic inequality is to accomplish the national objective of establishing a 'socialistic pattern of society' wherein every unit of the federation is treated equitably in all the matters concerning either the exploitation of economic opportunities or the distribution of the benefits of economic development. Almost all the Five Year Plans have accordingly emphasised on the need for a balanced regional development. The results of the planned development are however not in consonance with the national objective enumerated above.

While the economic performance of the country over the Plan Periods has generally been below the expertations for various reasons, the inter-state comparisons of the relative growth in incomes show even more disappointing results for certain states. While per capita real income of the country

*The views expressed here are those of the author and they should be interpreted as reflecting the views of the organisation to which the author is affiliated.

rose during 1962-63 to 1975-76 at marginally above one per cent annual average growth rate per capita real income of a backward state declined at the rate of 0.3 per cent per annum whereas incomes of certain advanced states increased at the rate of 2.3 per cent per annum, over the same period. The pattern of growth during the later half of the seventies has not alterned to any appreciable extent. Thus, while the incomes of certain states have either detriorated or recorded a poor performance, some other states have experienced a comparatively much better results. As a result of these differences, inter-state disparity has widened over the last two decades. The difference between per capita income in a prosperous state and that of a poorest state is presently of the order 3 to 1 as against 1.8 to 1 in the early sixties. This increasing disparity calls for an assessment of the relevant policies that have influenced the development of the different states' economies. Such an attempt would enable us to identify the major factors which have either helped or hampered the growth of the depressed economics. The plan of the article is as follows: - Part II describes the coverage of the study and emphasises on the significance of the study of the pattern of plan expenditure among the different states especially in the light of the fiscal constraints that are confronted by the states. Subsequently, the major objectives of the present exercise are outlined. Part III displays the statistical results and draws the major conclusions. The concluding Part IV, summarises the main findings of the exercise.

II. Coverage and Objective of the Study

As we know that in a developing economy, public investment plays a crucially important role in regard to both the extention of essential infrastructural facilities and the necessary stimulation of economic activities through a set of appropriate regulatory measures. The volume and the pattern of public investment, moreover, helps create such an economic condition that attracts private investment also. The following econometric relationship supports the contention that the volume of private investment is largely dependent on the size of public investment.[1]

$$\text{Log PRI}_t = 1.2307 + \underset{(14.97)}{0.8765}\ \text{Log PU I}_{t-1}$$

$$R^{-2} = 0.90$$

Where PRI = Private Investment

PUI = Public Investment

It is thus apparent that for a rapid development of a developing economy, it is the magnitude of the government's Plan expenditure which is a major determining factor of a high(or a low) level of the aggregate investment including private investment. The magnitude and the composition of such investment subsequently affects, of course, after a time lag, the level of development of the economy. In view of this, we shall examine

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[1] A Technical Note on the Sixth Plan of India 1980-85 Planning Commission, Government of India, P.85.

the trend in Plan expenditure among the Indian States.[2] We believe that such an analysis would provide a realistic perspective to the appraisal of the extent to which the major factors, such as, the states' own resources and the Central assistance which constitute the aggregate Plan expenditure could be said to have contributed to varying rate of growth for the different states. We may mention that the examination of the non-Plan expenditure of the states is beyond the purview of the present exercise. It may however be pointed out that non-Plan expenditure, which is incurred on the schemes completed under the previous Plans, is generally high (or low) in the states which have had a higher (or lower) Plan expenditure.

The analysis of the two factors namely the endeavours of the states to mobilise their own resources and the extent of the Central assistance for the Plan purposes is indeed important for two reasons : First, the states greatly differ in their natural endowment of resources. As a result of the differences in the resource bases, their performance in mobilising adequate resources from internal sources varies considerably across the states. This inevitably causes variations in their Plan outlays. However, in a federal country which is constituted on the basis of politico-economic considerations, it is expected that the deficiency in the states' resources would be duly equalized by the Centre. Second, the allocation of Plan assistance among the states is largely at the discretion of the Centre. While a

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[2]The choice of the states for our study purpose is based on general consensus on comparability of the fourteen states. The Central Government also follows the same classification for the distribution of Plan assistance.

substantial part of the Central assistance for the Plan purposes is determined on the basis of Gadgil Formula,[3] a part of the assistance is discretionary in nature and is linked with either the requirements of the states for completing the foreign aided projects or other specific needs which arise due to the specific circumstances, such as, flood, drought and law and order problems. Since the amount of the Central assistance is determined after a thorough scrutiny of individual state's resources, the claim of a state for a higher magnitude of such assistance is limited, for the decision rests with the Centre.

Thus, for all the development purposes[4] the states have to rely heavily on the resources from their own sources which are not sufficiently flexible. This is another major fiscal limitation of the states which we may elaborate further. While the Central government has access to significant sources of revenue, such as, foreign aids and borrowings, some outstandingly wide bases of tax and non-tax revenues and the power to create money, the revenues of the states are confined to a relatively narrow bases that are allotted to them either under the constitutional provisions or under the fiscal arrangements with the Centre. Another source of revenues for the states is the receipt from the Centre by way of financial transfers which are

[3] Under the revised Gadgil Formula 20 per cent of the Central assistance is allocated on the basis backwardness as against 10 per cent in the earlier formula. The remaining assistance is allocated on the basis of Population (60%) and 10% per cent each on the basis of tax effort and special problems.

[4] It may be mentioned that the development expenditure at the states level constitute about 70 per cent of the total development expenditure of the country. Further, there are evidences to show that the state-wise distribution of such expenditure through the schemes of the Central Plan has been regressive uptill the Fifth Plan (Please see author's Flow of Financial Resources and Inter State Disparities'(Mimeo)

effected on the recommendations of the Finance Commission and the Planning Commission. The aggregate transfers to the states as proportion of the total Central revenues have however declined from 74 per cent in 1960-61 to 54 per cent in 1976-77.[5] This source therefore indicates a limited amount of revenue for the states from the Centre. It may be noted, moreover, that neither of the two commissions have strictly tried to comply with the equity norms while recommending the devolution of resources from the Centre to the states. For instance, as a result of the seventh Finance Commission transfers, the inequality between the states' receipts, as measured by the Coefficient of Variations (CVs), show that the difference in per capita surpluses of the states on revenue account has increased to 70 per cent as against 65 per cent under the Sixth Commission. Similarly, while the Central assistance recommended by the Planning Commission for the states' Plan purposes is marginally progressive in the recent past, per capita Central investments made through the different Ministries among the different States are observed to be regressive.[6] These factors have undoubtedly aggrevated the fiscal imbalances among the states. Furthermore, in view of a highly

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[5] Based on the data in Report of Finance Commission (1978) and Indian Economic Statistics, Public Finance, Ministry of Finance (1981).

[6] As quoted in footnote 4.

circumscribed fiscal powers of the Centre as explained above, the revenues of the states from their own sources are found invariably inadequate to meet the costs of functions assigned to them either by the Centre or the schemes preferred and undertaken by them. The states, especially the poorer ones, therefore, excessively rely on the Central transfers for financing their Plan outlays. The extent of financial dependence will be discussed in the following Part III.

In the light of the foregoing discussions, the major objectives of the present exercise can be outlined as under :-

(i) to examine the extent to which the states have been able to finance their development programmes from their own sources. This would give an idea either of an increasing effort by the states to finance their Plan schemes or of a decreasing role of the Centre in providing finance to the states;

(ii) (a) to study the pattern of distribution of the Plan assistance among the states from the view point of distributive justice and to examine whether the present level of assistance can play the expected role of ensuring a balanced regional development;

(b) to analyse the extent of inter-state variations in state's own resources and the aggregate Plan expenditure with a view to examining the prospects for minimising the inter-state differences in the levels of development;

(iii) to examine the annual average growth rates of the Plan expenditure, states' own revenues and the Central assistance so as to establish whether or not the states, especially the poorer

ones, have made an increasing effort to mobilise resources for the Plan purposes;

(iv) to ascertain whether a high level of income and expenditure leads essentially to a high degree of revenue effort and economic performance among the states. This would hopefully reveal the relative efficiency of the states in regard to both the use of the Plan resources and the economic achievement.

III. Statistical Results

While describing the fiscal limitations of the states in Part II, we pointed out that owing to a relatively high intensity of incidence of poverty and general backwardness, most of the poorer states have found it difficult to generate adequate resources from their own sources either for financing their development programmes or for providing the essential services. There are, moreover, evidence to show that some of the backward states did not receive due favour from the Centre in the past even though they needed most. As against this, the advanced states have gained from the policies that have governed the devolution of resources from the Centre to the states.

Table 1 reveals[7] that Bihar, a backward state ever since the inception of the planning, contributed 46.6 per cent of its total plan size during the Ist Plan, whereas Punjab, a historically advanced state, contributed 12.4 per cent only from its own sources during that Plan. The remaining proportion of the aggregate Plan expenditure was supported by the financial

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[7] The states have been arranged in descending order according to their per capita SDP during 1976-78.

assistance provided by the Centre. It may be observed, further in the same table, that some other backward states also suffered from a similar inadequate assistance from the Centre. A discernible trend which emerge from the analysis of the pattern of financing the states' Plan expenditure is that the dependence of the states on the Centre has been declining. In the first Five Year Plan, all the states together could finance 39 per cent of their total Plan requirements and now in the current Sixth Plan they are estimated to finance 75 per cent of the total Plan expenditures from their own sources. Further, while the advanced states are able to finance a significantly higher proportion of the expenditure from their own sources, and are, therefore, less dependent on the Centre, the backward states are relatively more dependent on the Centre. This would suggest that the backward states are either unable to finance the desired average level of development expenditure and they are, therefore, receiving due help by way of Central assistance or the magnitude of the Plan expenditure for these states is much less than the average for the states; and, as a result, the dependency ratio shows upward bias even when the contribution of the Centre or the states is not accordingly high to the average extent. A more clear picture of the relative contribution of the Centre and the states for the development of the latters economies would emerge from the following analysis which examines whether a reasonable level of the Plan for each state was formulated either at the initiative of the states or with the help of the Centre with a view to containing the inter-state disparities within tolerable

limit. This would hopefully ascertain whether the national development policies have adequately encompassed the relevant measures that should help achieve the regional equity in growth in income and the quality of life.

Table 2 presents separately the indices of per capita aggregate expenditure state's own revenues and Central assistance for the different Plan periods. It may be observed that the indices of the aggregate Plan expenditure indicate a highly favourably trend for the advanced states than others throughout the Plan periods. The major factors, inter-alia that have contributed to a high magnitude of the Plan expenditure for these states are indeed both the states' own resources and the Central assistance. This is amply revealed from the respective indices displayed in the said table. As may be expected a priori, the advanced states have been able to contribute relatively more than other states to their Plan expenditure. The financial assistance from the Centre has however also gone more to the advanced states during most of the previous plans. While in the recent past some of the backward states have got marginal favour in the distribution of the Central assistance, some of the advanced states have continued to receive above the national average even though their per capita Plan expenditure, without the Central assistance, has been much higher. The conclusion which ineviably obstrude is that the mechanism of the allocation of Plan assistance has not properly given due weightage either to the factors that impinge upon the growth of each state economy or to the need for revenue equalisation across the states.

Table - 1 : States' Own Revenues as Proportion of the Aggregate Plan Expenditure

(Percentages)

State	I Plan	II Plan	III Plan	Annual Plans	IV Plan	V Plan	VI @ Plan
Punjab	12.4	41.7	47.2	57.0	77.1	73.2	84.7
Haryana	-	-	-	45.9	78.8	73.7	86.9
Maharashtra	68.6	65.4	61.5	71.5	76.2	82.4	85.8
Gujarat	64.8	66.0	52.9	63.0	71.7	78.0	83.7
West Bengal	26.1	53.2	48.3	30.4	41.5	62.2	80.6
Karnataka	31.9	51.1	37.5	43.5	55.3	69.1	76.2
Tamil Nadu	54.3	48.9	45.3	54.7	64.3	56.0	78.9
Kerala	35.1	51.9	33.0	38.6	48.9	53.2	72.2
Rajasthan	9.1	41.0	23.3	12.4	31.1	55.4	69.1
Andhra Pradesh	45.0	47.0	36.2	31.8	45.4	59.1	70.8
Madhya Pradesh	35.8	33.8	24.0	14.4	46.6	65.6	73.3
Uttar Pradesh	47.9	46.9	36.4	42.9	56.1	56.3	67.0
Orissa	20.2	25.8	38.8	33.6	37.8	42.0	56.0
Bihar	46.6	52.5	34.9	29.0	31.2	43.9	60.9
All States	39.1	49.4	40.8	43.6	57.4	64.1	75.4

@ Sixth Plan Allocation.

Source: Computed on the basis of data contained in the article by S.P Gupta et al on States Plan Outlays and Central Assistance presented at the Conference on 'Indications of Regional Development and Plan Cooperation' at Nainital, April, 1982.

Note: The States have been listed in descending order according to their per capita SDP in 1976-78.

Table-2 Indices of Per Capita Plan expenditure, Per Capita States' Own Resources for the Plan and Per Capita Central Assistance.

State	Plan Expenditure							States'Own Resources							Central Assistance						
	I Plan	II Plan	III Plan	Annual Plans	IV Plan	V Plan	VI Plan	I Plan	II Plan	III Plan	Annual Plans	IV Plan	V Plan	VI Plan	I Plan	II Plan	III Plan	Annual Plans	IV Plan	V Plan	VI Plan
Punjab	446	286	236	150	230	206	170	147	248	103	196	308	254	191	633	323	328	115	128	122	106
Haryana	x	x	x	152	261	190	212	x	x	x	162	358	219	244	x	x	x	114	129	139	113
Maharashtra	118	112	114	138	145	148	145	213	148	170	227	200	191	164	58	77	75	71	81	73	84
Gujarat	136	147	120	140	149	145	163	227	196	154	204	185	177	180	79	100	86	91	96	82	108
West Bengal	138	94	89	65	60	79	93	93	104	103	46	43	77	100	167	85	79	79	83	84	74
Karnataka	87	122	111	117	93	104	91	73	128	100	115	91	112	92	96	115	119	118	97	89	88
Tamil Nadu	77	112	109	118	98	79	90	107	112	122	335	110	69	95	58	112	100	94	81	96	77
Kerala	67	116	112	122	115	88	66	60	140	89	108	99	74	82	71	92	128	132	136	115	97
Rajasthan	103	104	108	93	88	94	95	27	88	57	27	49	82	89	150	119	143	144	140	117	105
Andhra Pradesh	90	102	101	97	72	95	84	107	96	89	69	57	88	79	79	108	109	118	91	108	100
Madhya Pradesh	87	94	93	73	83	97	108	80	68	57	23	68	99	105	92	119	119	112	103	93	117
Uttar Pradesh	67	67	80	88	96	93	78	87	68	70	88	90	82	69	54	65	87	88	105	113	105
Orissa	141	106	135	102	83	82	81	33	56	127	77	56	54	60	208	154	140	121	121	132	145
Bihar	67	78	74	67	62	59	68	80	84	62	46	35	41	54	58	73	83	82	98	92	108
All States	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Coefficient of Variation (%age)	100	54	40	30	61	44	42	98	58	36	68	101	66	57	156	66	65	24	21	19	18

Source: Same as in Table 1.

As a result, the extent of inequality in per capita Plan expenditure, as measured by the Coefficient of Variation (CVs) indicated substantial difference. The relevant CVs may be seen in the above mentioned table. The variations in the states' contribution from their own sources for the Plans are more than the differences in the Central assistance which has however been declining over the Plan periods. It is interesting to find that the states which have had a higher per capita Plan expenditure, are also those which have a relatively high per capita income. But, the extent of inter-state difference in the Plan expenditure and the rate of increase in per capita SDP may not be of the same order; for, the relative efficiency of the states might differ. We shall return to it later.

It has been asserted by lay and learned critics of the development economics that the backward states have not made enough efforts to improve upon their economic conditions either by augmenting sufficient resources from their own sources for investments or by implementing the development programmes efficiently. We shall deal with both the assertions separately in the following discussions and see whether they are tenable.

Table 3 presents the relevant annual average growth rates of per capita states' own resources, Central assistance and the aggregate Plan expenditure for the period covering the Fourth through the Sixth Plans. While the rate of increase in the Central assistance for the backward states is not significantly higher than the advanced states, the rate of increase in the states' own contribution to their Plans is much higher for the

former category of the states compared to the latter ones. In absolute terms, the advanced states have raised more revenues than other states. This may be ascribed mainly to the differences in the relative revenue bases which are related to income. Inspite of this, it may be concluded that, with the given limitations, the performance of the backward states has been creditable in augmenting resources for the Plans. The Central assistance has however not mached the level of efforts made by the backward states even though they needed most for accelerating the pace of development.

There is another way to look at the states expenditure and revenue effort with a view either to examining the extent of variations in the major indicators of development or to ascertaining the observations made above.

Table 4 presents the indices of income, expenditure and revene effort. In addition to this, it also shows the annual average growth rates of per capita SDP. The main conclusions which can be derived are as follows:-

(a) While the advanced states have made above the average revenue effort and have accordingly incurred expenditure also, some of the backward states have experienced a poor result, below the average for the states, in respect of both revenue effort as well as expenditure levels;

(b) The advanced states have made a relatively higher expenditure while making somewhat lower revenue effort, whereas other states incurred a low level of expenditure despite a high

Table-3 : Annual Average Growth Rates of Plan Expenditure, States Own Resources and the Central Assistance during the Fourth Plan through the Sixth Plan.

Sl. No.	State	Plan Expenditure	States' own Revenues	Central Assistance
1.	Punjab	16.4	17.5	11.6
2.	Haryana	17.5	18.6	12.1
3.	Maharashtra	19.9	21.3	14.0
4.	Gujarat	21.0	22.9	14.7
5.	West Bengal	25.4	34.0	12.3
6.	Karnataka	19.7	23.4	12.6
7.	Tamil Nadu	19.0	21.4	13.1
8.	Kerala	16.5	21.0	9.8
9.	Rajasthan	20.7	30.7	9.9
10.	Andhra Pradesh	22.0	27.4	14.7
11.	Madhya Pradesh	23.1	28.6	15.1
12.	Uttar Pradesh	17.5	20.1	13.6
13.	Orissa	19.6	24.2	15.7
14.	Bihar	21.0	28.7	14.7
	All States	20.0	23.3	13.6

Source: Same as in Table-1.

Table-4: Indices of Per Capita Income, Plan Expenditure, revenue effort and the annual average growth rate of per capita S.D.P.

State	Indices of Per Capita			Annual average growth rates of per capita SDP (1970-71 to 1977-78)(at current prices)
	Income	Plan Expenditure(a)	Revenue effort(b)	
Punjab	197	206	122	10.2
Haryana	167	190	120	9.6
Maharashtra	145	148	140	9.5
Gujarat	141	145	115	8.5
West Bengal	110	79	97	7.0
Karnataka	106	103	128	8.1
Tamil Nadu	102	78	131	8.7
Kerala	101	88	140	7.3
Rajasthan	99	94	88	7.9
Andhra Pradesh	87	95	135	7.3
Madhya Pradesh	79	96	98	8.7
Uttar Pradesh	78	92	89	7.8
Orissa	77	82	74	6.7
Bihar	65	59	65	7.7
All States	100	100	100	8.2
Coefficient of(c) Variation(Per cent)	38	44	25	13

Source: Computed on the basis of data in the Finance Commission (1978) and States Budget.

Note: The reference year for income is 1976-78 and for expenditure and revenue effort is 1978-79.

(a)Inded of Plan Expenditure= $\frac{\text{Total Plan expenditure of a State}}{\text{All States Average}} \times 100$

(b)Index of Tax Effort= $\frac{\text{Tax Revenue of a states \%of SDP}}{\text{Aggregate Tax Revenue as \% of SDPs for all states}} \times 100$

(c)Coefficient of Variation(in percent)=$\frac{\text{Standard Deviation}}{\text{Average}} \times 100$

revenue effort. To elaborate, the index of expenditure for an advanced state, say Punjab, was 206 while the index of revenue effort was 122. As against this, in the case of a backward state, say Bihar, the index of expenditure was 59 while the index of revenue effort was 65.

(c) Whereas the Coefficient of Variations (CVs) for per capita income and expenditure are substantially higher at 38 and 44 per cent respectively, the CVs for revenue effort and economic performance are much lower at 25 and 13 per cent respectively.

The foregoing evidences clearly suggest that (i) most of the backward states, despite their poor administration comparatively speaking, have shown a remarkable performance in exploiting the tax bases under their jurisdictions; (ii) even if the backward states make the revenue effort to the order of that made by the more advanced states, the size of the Plan expenditure of the former cannot be raised to the level obtaining in the latter states. For instances, the case of Andhra Pradesh and Kerala prove the point. While these two states have made the revenue effort to the order of 140 and 135 respectively, the index of expenditure show as low as 88 and 95 respectively; and (iii) the backward states despite their poor economic and fiscal administration, are reasonably efficient compared to other states in regard to both the mobilisation of per capita revenues for the Plans and in increasing the growth in per capita SDP. This is ascertained by substantially low level of CVs for revenue effort and economic performance compared to the CVs for income and expenditure.

IV. Summary and Conclusions

We may now recapitulate the major findings of this exercise. The examination of the growth in per capita real incomes of the states over the last two decades indicated a steadily weidening of inter-state disparity. Of the major factors that may have accentuated the regional disparities in developments are both the relative financial capacity of the states and the favourable Central assistance to certain states. Our analysis indicated that while the advanced states have been able to finance a bulk of the Plan requirements as compared to other states, the assistance from the Centre has generally helped in magnifying their Plan expenditure. Though in the recent past the backward states have, however, got marginal favour, the magnitude of the assistance to these states has not enabled them to have a reasonable size of their Plans i.e. to the extent of the states average. It was interesting to note that the revenues of the backward states for the Plan purposes have risen at a higher rate than the advanced states over the last three plans (including the current Sixth Plan). It, therefore, indicated that the backward states have made the expected efforts to improve upon their economic conditions. The rate of increase in the Central assistance to the backward states was observed to be marginally higher than other states, though in absolute terms the assistance was not desirably sufficient. In view of this, it was inferred that the financial transfer policy of the Centre has not been duly progressive for arresting the growing disparities. Another interesting result was that the analysis did not strongly

corroborate the assertion that a higher magnitude of investment in the backward states is not desirable due mainly to efficiency reasons. The evidences indicated that while inter-state variations in income and expenditure were very high, the variations in revenue effort and economic performance were relatively much lower; implying thereby, a reasonably better endeavour by the backward states in regard to both the mobilisation of revenues for the Plans and the promotion of development activities. Thus, despite the persisting backwardness, the poorer states cannot be said to have lagged much behind those states which have had relatively more infrastructural facilities for accelerating the pace of development. These evidences, therefore, led us to recommend a higher magnitude of public investment in the underdeveloped regions in order to provide necessary infrastructural facilities. While such facilities would help attract private investments, a substantial outflow of resources, such as, capital and labour, to the more advanced regions could be minimised. Moreover, a reasonable size of the Plan for the backward states would, thus, stimulate economic growth and help achieve the national objective of a balanced regional development.

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Trends in Tax Effort of Indian States

D. N. DWIVEDI

The objectives of this paper are twofold: first, to estimate the tax effort of Indian States and look into the trends thereof; and second, to make an interstate comparison of tax efforts in some selected years of plan period. An exercise of this kind is mainly of informative value. A study of trends in tax efforts will indicate whether tax effort of state governments has, over time, increased or decreased. Interstate comparison of tax effort will reveal whether some states are making low tax effort than the others. The latter is more important insofar as it reveals whether poor states are making less tax effort than relatively richer ones.

This study is divided into five sections. Section I briefly reviews the various measures of tax effort which have been used or suggested in earlier studies. Section II outlines the approach adopted, in the present study, to measure the tax effort of States. Section III indicates the coverage of the exercise and data sources. The statistical results are analysed in section IV. Section V summarises the main findings of this study.

Measuring Tax Effort/Performance

Measuring tax effort or performance of a country or of any of its administrative units is an extremely difficult proposition. Public finance experts have not yet succeeded in devising a noncontroversial method of measuring tax effort. Although a number of tax effort measures have been suggested and used in earlier studies on the subject, none has been found to be methodologically satisfactory. Our attempt here is not to devise a new measure of tax effort, but to briefly review the various measures used in earlier studies and to indicate one that can be used to fulfil our requirement in this paper.

One of the popular measures of tax effort used in international and interstatel comparison of 'tax burden' or 'tax performance' is the ratio of actual tax collection to some indicator of 'taxable potential' or 'taxable capacity' [e.g., US(1962), Desai (1965)]. The most common indicator of taxable capacity used is GNP. The tax effort is thus measured in terms of tax/GNP ratio (hereinafter referred to as 'tax ratio'). Some [e.g., Chelliah (1971)] have used also marginal tax/GNP ratio (i.e., $\Delta T/\Delta GNP$). These tax ratios as measures of tax effort

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1 See Finance Commission (1969), Report, p. 55.

have however several drawbacks: (1) they do not distinguish between buoyancy of a tax system and tax effort[1], (II they make no allowance for differences in taxable potential of different countries or states; and (III) when used to compare tax effort over time, they make no allowance for the initial differences in tax ratios (i.e., in the base year).

Over the past 15 years, however, Lotz and Morss [1967], and following them, Musgrave [1969], UNCTAD [1970], Raja J. Chelliah [1971], and Alan A. Tait et. al. [1977] have attempted to improve the tax ratios by eliminating the influences of the factors that affect the taxable capacity of a country. The basic approach of these studies is to compute, what may be called, a taxable capacity ratio,[2] (i.e., the ratio of tax potential to GNP) and compare it with the actual 'tax ratio' (i.e., the ratio of actual tax collections to GNP) in respect of each individual country. The concept of capacity ratio assumes a 'standard tax structure' that can yield a 'target revenue' in a country when 'standard rate' are applied. The capacity ratio is estimated by regressing the tax ratios of a group of countries on the variables that serve as proxies for their taxable capacity. For this purpose, data from a cross section of countries are used. This approach is generally known as 'adjusted tax ratio' approach.

The 'adjusted tax ratio' approach, however, has been severally criticised for its theoretical and emperical limitations. It has been argued that there is 'inadequate a prior justification for the use of certain selected variables as measures of taxable capacity' [Bird (1976)]. Further, it is generally believed that the tax system of most developing countries are far from being ideal: they contain many distortions. An average of distorted tax systems of a group of countries cannot yield an ideal norm for evaluating tax performance of a country [Tanzi (1968)]. Besides, tax effort studies do not care for progressivity in tax system. The critics however agree that 'adjusted tax ratio' approach yields a more satisfactory tax effort index then the simple tax ratio.

An alternative approach to measure taxable capacity and tax effort, as used by Newcomer [1935] and later by the Advisory Commission on Intergovernmental Relations [1962], is based on a 'representative tax system'. The basic idea behind this approach is to set up (or assume) a standard tax system, apply it to a group of countries or states of similar characteristics and to predict the tax yield. The tax effort measure is then obtained as

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1. Tax effort means the tax revenue which can be attributed to the discretionary changes made in tax structure (eg., imposition of new taxes, increase in tax rates, extension of tax lease, etc.) and effective implementation of tax laws and collection of revenue.

2. Hereinafter referred to as 'Capacity ratio'.

the ratio of actual to the predicted tax yield. A measure of taxable capacity is obtained as the ratio of predicted tax yield to the GNP. The major problem in this approach lies in devising a 'representative tax system' free from arbitrariness and subjectivity. This, however, has not been possible so far. What at best can be done is to take the average of a group of countries under reference or the national average in case of selected states of a country, and predict the tax yield. Thus, this approach is essentially not much different from the 'adjusted tax ratio approach'. No wonder, therefore, Bahl's results [1972] based on 'representative tax system' applied to a group of LDCs are not significantly different from those obtained by 'adjusted tax ratio approach'.

Another alternative measure to tax effort might be the buoyancy of tax system of country minus the automatic change in tax yield. The residual may be treated as tax effort. It is however extremely difficult to separate 'automatic' and 'discretionary' components of the total tax yield. Owing mainly to data problems, this method has not been attempted. Although Mansfield [1972] developed a process of separating elasticity from the buoyancy, his process is analogous to separating 'capacity' from the 'effort' component from the tax ratio, and consequently, is subject to some of the objections against the latter [Bird (1976)].

Raja J. Chelliah [1971] has used income elasticity of tax as a measure of tax effort. In fact, as suggested by Bird [1976], it is the difference between the buoyancy of a tax system and its income elasticity (i.e., the automatic change in tax revenue) which might be a measure of tax effort, not the income elasticity as such. Besides, the concept of income elasticity of taxes gross of revenue resulting from the discretionary changes in the tax structure overlaps with the concept of buoyancy. Income elasticity is therefore not a satisfactory measure of tax effort.

As it seems, no technique of measuring tax effort, developed and used so far, is free from drawbacks. Developing a new technique or improving those in usage seems to have little scope owing to conceptual complexities and data problems. What one can do is to select one or more alternative methods suitable to one's objective and perform a comparative analysis of tax effort of a group of countries or states. This is what has been attempted in this paper.

II

Tax Effort Model

In the present study, we have followed the 'adjusted tax ratio' approach (hereinafter referred to as 'capacity ratio'

approach). Under this approach, the multiple regression equation estimated for computing the taxable capacity ratio (T/Y) is of the form,

$$T/Y = f(x_1, x_2, x_3 \ldots\ldots x_n) \quad \ldots\ldots (1)$$

Where x_1, x_2, $\ldots x_n$ are independent variables that serve as proxies for the taxable capacity factors, called "tax handles."

The major problem in this approach lies in specifying the appropriate proxy variables. A number of variables have been suggested in the literature[1]. In fact, as Bahl [1971] has observed one may consider an almost infinite number of 'variables that conceivably affect taxable capacity'. But 'data limitations', 'methodological and a priori constraints' limit the choice of explanatory variables. Methodological constraints arise where there exists collinearity between the variables. Often, inclusion of certain variables, on a priori basis, is prohibited by nonavailability of data.

We had initially considered three proxy variables: (i) per capita income, (ii) urbanisation (i.e. the percentage of urban to the total population), and (iii) poverty ratio (i.e., the percentage of population below the poverty line). The reasons for choosing these variables are as follows.

(i) The positive relationship between tax-ratio and per capita income is well known through the works of Oshima [1957], Williamson [1961] and Hinrichs [1966]. Our hypothesis in this regard is that states with higher per capita income have higher taxable potential.

(ii) A high rate of urbanisation is supposed to increase taxable capacity through (a) increase in taxable manufactured goods, income and property (b) change in consumption pattern, and (c) increase in monetary expenditure. We assumed a positive sign of the co-efficient of urbanisation.

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1. The list of proxy variables used in various studies includes (I) per capita income (as proxy for economic growth), (II) share of agricultural sector in the GNP, (III) percentage of population above the subsistence level, (IV) urbanisation ratio, (V) per capita development expenditure, (VI) literacy ratio, (VII) share of mining in GNP, and (VIII) proxies for "openness" of the economy, viz, (a) share of exports in GNP, (b) share of exports plus imports in GNP, (c) per capita exports, (d) per capita imports, etc.

(iii) In respect of poverty ratio[1], it was assumed that concentration of income with population' above poverty line increases taxable potential. This assumption is in line with the general belief that unequal distribution of incomes increases taxable capacity.

Under these assumptions, initially, the following regression equation was estimated.

$$\overset{*}{T}/Y = a + b\,\bar{Y} + cU + d\,PR \qquad \ldots\ldots\ldots (2)$$

(Where $\bar{Y}$ = per capital income; U = urbanisation rate; and PR = poverty ratio).

However

The estimated equation revealed a high multi-collinearity between (i) per capita income and urbanisation ($r = 0.457$)[2], and (ii) between per capita income and poverty ratio ($r = -0.570$). The coefficient of poverty ratio was however found to be statistically insignificant.

Since multicollinearity undermines the reliability and policy implications of the results, we had to drop, 'urbanisation' and 'poverty ratio' from the estimated equation. Finally, the following equation was estimated.

$$\overset{*}{T}/Y = a + b\,\bar{Y} \qquad \ldots\ldots\ldots (3)$$

After equation (3) was estimated, the taxable 'capacity ratio ($\overset{*}{T}/Y$) for each state would be obtained by plugging in the equation the values for $\bar{Y}$.

For making interstate comparison of tax effort and to study the trends in tax effort a 'tax effort index' (TEI) was formed by using the following formula.

$$\text{TEI} = \text{Actual tax Ratio} \div \text{Capacity ratio}$$

$$= (T/Y) \;/\; (\overset{*}{T}/Y)$$

---

1. Time series statewise data on poverty ratio are not available. We had therefore used poverty ratio published in the Report of the Finence Commissionex (1978, p. 239). Also, we tried rural poverty ratio estimated by M.S. Ahluwalia, ("Rural Poverty in India" Jl. of Dev. Stud, October 1978) as proxy for over all poverty ratio.

2. Another evidence of Collinearity between these was found in the estimated equation. Inclusion of 'urbanisation' rendered coefficient of per capital income almost insignificant, which otherwise explains 33-50 percent variations in tax ratio.

For judging the tax performance of the states the following criteria were followed.

(i)	If TEI $\geq$ 1,	tax performance is greater than taxable capacity.
(ii)	If TEI = 1,	tax performance equals or almost equals the taxable capacity.
(iii)	If TEI < 1,	tax performance is less than taxable capacity.

III

Coverage and Data

This study covers only 16 states because comparable data for other states are not available. In fact, most of other states are of recent origin.

To look into the trends in tax efforts, we have selected three periods, 1961-64, 1967-70 and 1973-76, because state-wise comparable data on incomes are available only for this period. In order to minimise the influence of fortuitous factors, 3-year averages of tax and income data have been used.

Tax revenue includes all direct and indirect taxes levied and collected by state government plus central interstate sales tax. Although inter-state sales tax is levied and collected by the centre[1], its revenue is assigned to states. Under the Central Sales Tax Act (1956), sales tax became leviable on inter-state transfer of goods by sale. Thus, a state from which goods move as a consequence of sale to other state could levy a tax on it and retain the proceeds. It is therefore assumed that, had the centre not imposed, collected and assigned the proceeds to the state of origin, the state might, on its own, impose and collect this tax. This tax is therefore very much a part of the state tax revenue.

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1. Perhaps on this account, Reddy [1975] has excluded Central Sales tax.

2. Cf. Lakadawal D.T. and Nambiar K.V., Commodity Taxation in India (Sardar Patel Institute of Economic and social Research, Ahmedabad) p. 83.

The required data have been collected from various sources. Data on tax revenue were collected from the various issues of the RBI Bulletins. The tax/GNP ratio for 1961-64 in case of Haryana has been obtained through proportional adjustment on the basis of post-reorganisation data.

Statewise data on per capita and total incomes were obtained from the (unpublished) estimates (comparable series) of CSO. State income estimates for 1961-62 are not available on comparable basis. Therefore, States' own estimates were used to obtain 3-year average.

IV

Statistical Results*

The statistical results of the whole exercise, including tax ratios, taxable 'capacity ratios' and tax-effort-indices (TEI) are presented, alongwith ranking of states, in Appendix II. The information contained in Appendix II has been further classified (a) to analyse trends in tax effort of individual states, and (b) to find out whether rich states make greater tax efforts than poor states. In case of latter we have traced the relationship, if any, between the tax effort and per capita income of the states.

Trends in Tax Effort

To analyse the tax effort, states have been classified, in Table 1, under two categories: (1) those making increasing tax effort and (2) those making decreasing tax efforts, over time. As table 1 reveals, 9 states, viz., Andhra Pradesh, Gujrat, Jammu and Kashmir, Karnataka, Madhya Pradesh, Maharashtra, Tamilnadu, Haryana and Uttar Pradesh, have stepped up their tax effort over time, though the trend in the last two states has not been continuous. Tax effort in case of other states has gone down over time. Of the states which have made increasing tax effort, Tamilnadu and Andhra Pradesh have made most appreciable effort, followed by Gujrat and Madhya Pradesh. Of the states in whose tax effort has gone down, the worst case is of Punjab, followed by Bihar. Punjab ranked 1st in tax effort

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* A summary of estimated regression equations in given in Appendix I.

TABLE 1.

Trends in Tax Effort of 16 States

States	1961-64		1967-70		1973-76	
	TEI[1]	Rank[2]	TEI[1]	Rank[2]	TEI[1]	Rank[2]
I: States making Increasing Tax Effort						
1. Andhra Pradesh	1.000	6	1.073	6	1.245	2
2. Gujrat	0.812	13	1.044	8	1.071	6
3. Jammu & Kashmir	0.540	15	0.865	13	0.756	15
4. Karnataka	1.000	6	1.220	4	1.113	5
5. Madhya Pradesh	0.972	8	1.053	7	1.114	4
6. Maharashtra.	0.920	10	1.261	2	1.047	8
7. Tamilnadu	0.977	7	1.286	1	1.440	1
8. Haryana	0.956	9	0.880	12	0.970	9
9. Utter Pradesh	1.147	4	0.846	14	1.050	7
II: States Making Decreasing Tax Effort						
1. Assam	0.857	12	0.643	16	0.795	14
2. Bihar	1.161	3	0.917	10	0.974	10
3. Kerala	1.270	2	1.244	3	1.160	3
4. Orissa	0.776	14	0.667	15	0.659	16
5. Punjab	1.490	1	0.964	9	0.901	12
6. Rajasthan	1.054	5	1.184	5	0.957	11
7. West Bengal	0.894	11	0.911	11	0.868	13

1. TEI = Tax Effort Index

2. Ranking in 16 States.

Source: Appendix II.

TABLE 2.

Classification of States Under TE $\geq$ 1 and TE $<$ 1

Category	1961-64		1967-70		1973-76	
	States*	TEI	States*	TEI	States*	TEI
I: TE $\geq$ 1	Punjab	1.490	Tamilnadu	1.287	Tamilnadu	1.440
	Kerala	1.270	Maharash-tra	1.261	A.P.	1.200
	Bihar	1.161	Kerala	1.244	Kerala	1.160
	U.P.	1.147	Karnataka	1.220	M.P.	1.114
	Rajasthan	1.054	Rajasthan	1.184	Karnataka	1.093
	Karnataka	1.000	A.P.	1.073	Gujrat	1.071
	A.P.	1.000	M.P.	1.053	U.P.	1.050
			Gujrat	1.044	Maharashtra	1.031
	7 States		8 States		8 States	
II: TE $<$ 1	Tamilnadu	0.977	Punjab	0.964	Haryana	0.970
			Bihar	0.917	Rajasthan	0.957
	M.P.	0.972	W.B.	0.911	Bihar	0.950
	Haryana	0.956	Haryana	0.880	Punjab	0.890
	Maharashtra	0.920	J & K	0.865	W.B.	0.868
	W.B.	0.894	U.P.	0.846	Assam	0.778
	Assam	0.857	Orissa	0.667	J & K	0.756
	Gujrat	0.812	Assam	0.643	Orissa	0.644
	Orissa	0.776				
	J & K	0.540				
	9 States		8 States		8 States	

* In order of their tax effort.

in 1961-64. But in subsequent period, it went down to 9th and then to 12th position. Bihar went down in tax-effort ranking from 3 to 10 over time. The case of Kerala needs a special mention. Although its tax effort index has decreased over time -- from 1.27 in 1961-64 to 1.24 in 1967-70 and to 1.16 in 1973-76 -- it has been throughout greater than 1.

Another point worth mention is that nearly half the states considered here have made tax effort, over the reference period, either in excess of or equal to their taxable capacity (table 2). The combination of states belonging to this category, however, has been changing. The only 3 states whose tax effort has throughout exceeded their taxable capacity are Andhra Pradesh, Karnataka, Kerala.

Per Capita Income and Tax Effort

In this section, we turn to the question whether states having higher per capita income are making greater tax efforts than those having lower per capital income.[1] Some broad inferences may be drawn from tables 1 and 2. This issue however merits an examination in somewhat greater detail.

For this purpose, the states, given their (3-year average) per capita income, and tax effort indices (TEI), have been graphed in Figures I-A, I-B and I-C for 1961-64, 1967-70 and 1973-76, respectively. Each Figure contains four quadrangles marked (i) low income - high tax effort, (ii) high income - high tax effort, (iii) low income - low tax effort; and (iv) high income - low tax effort.

The distribution of states in four quadrangles indicates absence of any relation between the level of per capita income and tax effort. In 1961-64, only one state (Punjab) belonging to high income group made high tax effort. All other states of this group made tax efforts below their taxable capacity. On the contrary, the tax performance of majority of states belonging to low-income group was higher than their respective taxable capacity. The picture in other years is not much different. In 1969-70 only two states (Maharashtra and Gujrat) and in 1973-76, only three states (Maharashtra, Gujrat and Karnataka) of high income group made tax efforts only marginally greater than their respective taxable capacity. The tax effort of other states of high-income group, viz., Haryana, Punjab, West Bengal and Assam was much below their capacity to tax. The untaxed capacity ranges from 3 to 36 percent.

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1. Hereinafter the two groups of states are referred to as 'high income' and 'low income' states.

FIGURE I-A
1961-64

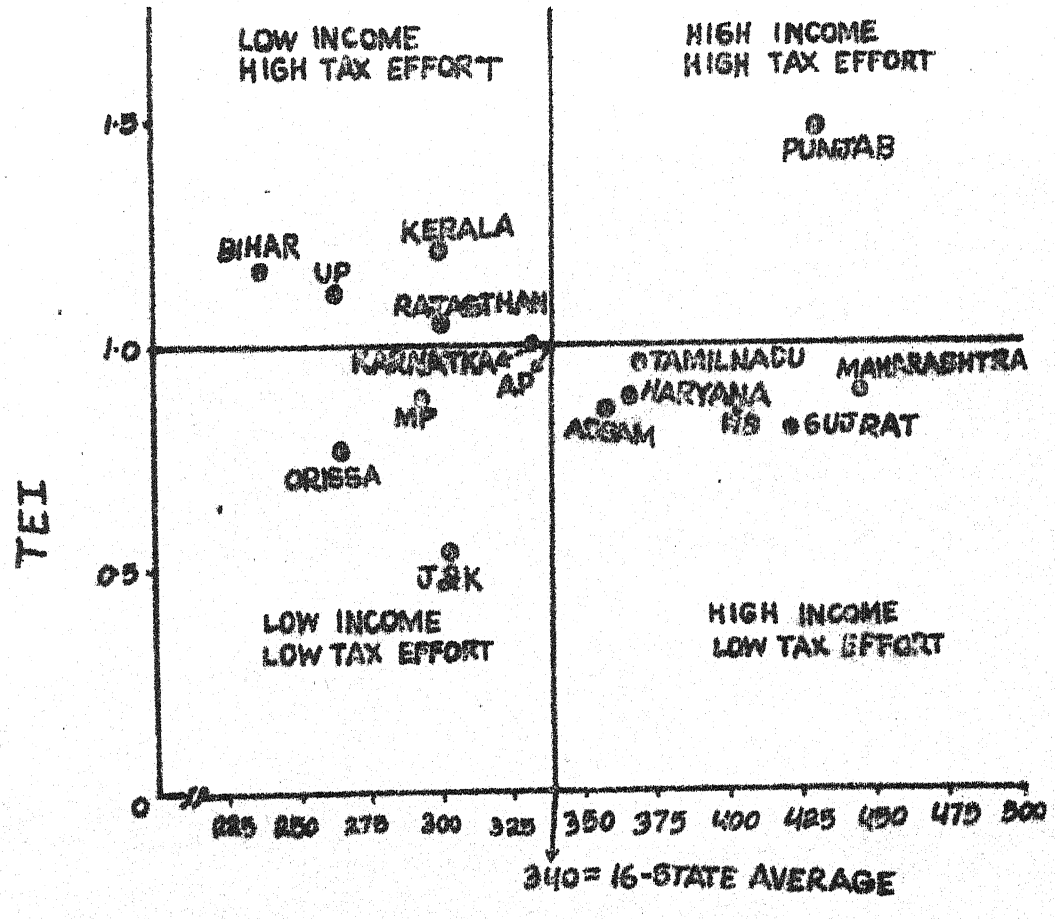


FIGURE I-B
1973-76

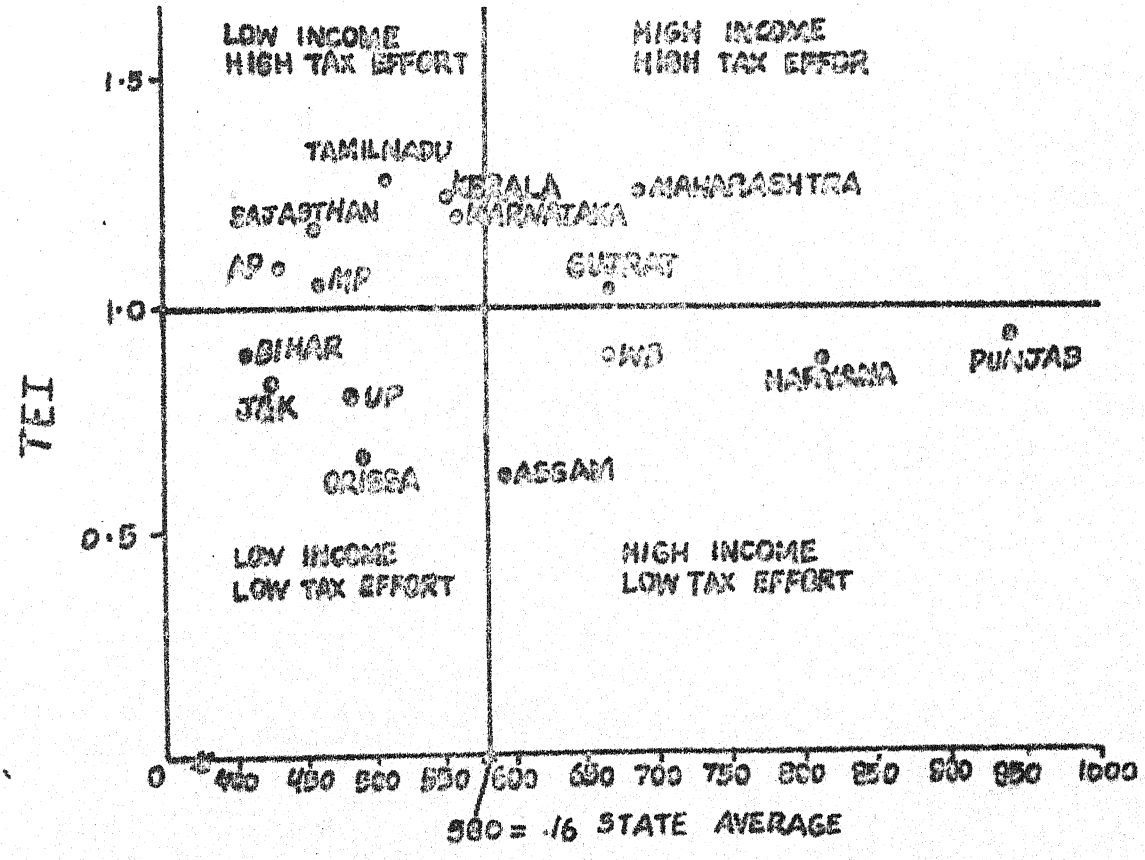
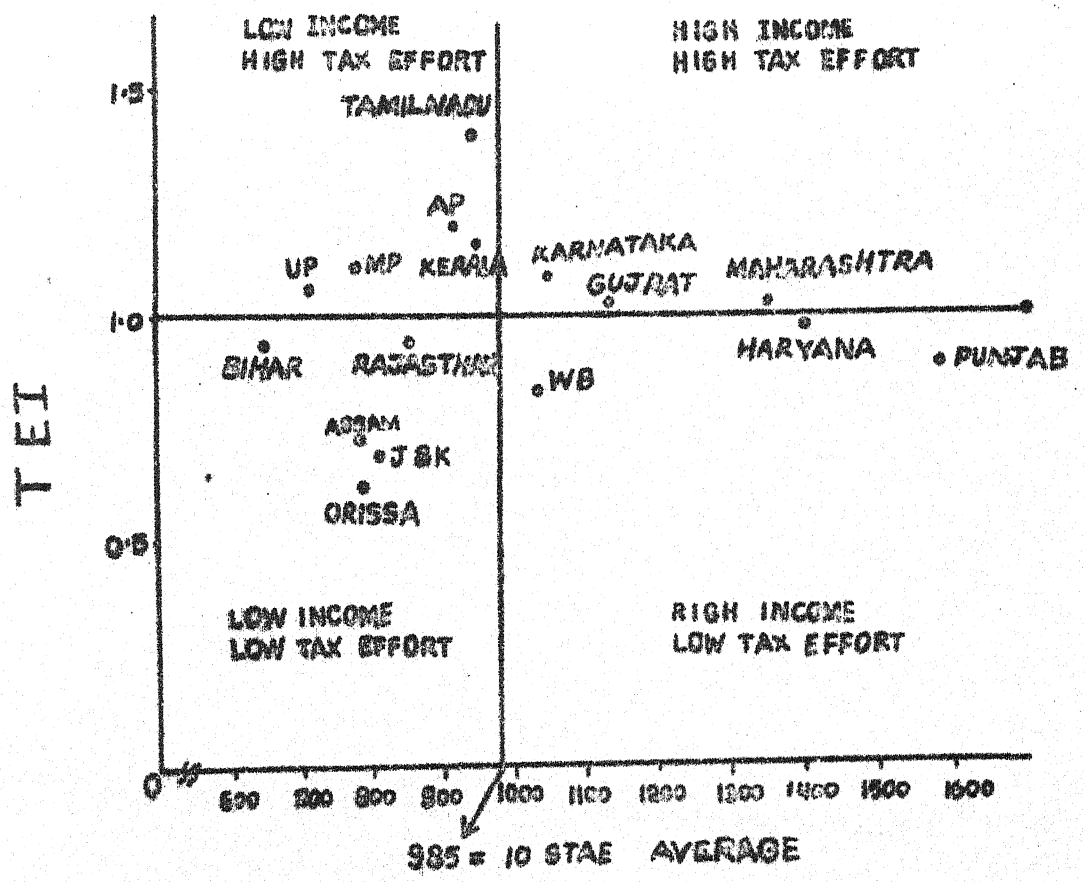


FIGURE I-C

1973-76



In contrast, in 1967-70, 6[1] out of 10 states, and in 1973-7(5[2] out of 10 states belonging to low-income group have made a remarkably higher tax effort and have collected revenue in excess of their respective taxable potential. Their taxation in excess of their taxable potential ranges from 3 to 44 percent.

An obvious conclusion that emerges from this exercise is that the interstate economic disparity exists inspite of much better tax performance of the poor states. The reasons for existence of interstate and interregional disparity have therefore to be traced in other factors of development. This however should not mean that low income states making low tax effort need not increase their, effort to mobilise their taxable potential. There is rather a case for them to emulate the example of 'low income-high tax effort' states.

This conclusion is based on a single determinant of taxable capacity, i.e., per capita-income. If other variables affecting taxable capacity are included in the tax effort model, inspite of their multi-collinearity, the tax performance index of poor state may go further up and that of rich states may slide further down. For example, if 'urbanisation ratio' is included in the tax-effort model, it will enhance the taxable capacity of the rich states and reduce that of the poor States. Given their tax ratio, the TEI (i.e. tax ratio $\frac{}{}$ capacity ratio) of rich state will further decrease and that of poor states will further increase. It is quite likely, therefore, that some states of 'low income - low tax effort' category may move upto 'Low-income - high tax effort' category, and some states of 'high income - high tax effort' category may go down to 'high income - low tax effort' category. With this kind of expected trend, our conclusion based on single variable model is reinforced.

V

Summary

In pursuance of the two objectives of this study i.e. (1) tracing trends in tax efforts of the states, and (II) making

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1. Viz., Andhra Pradesh, Kerala, Karnataka, Madhya Pradesh, Rajasthan and Tamilnadu.

2. Viz., Andhra Pradesh, Kerala, Madhya Pradesh, Tamilnadu and Uttar Pradesh.

interstate comparison of tax performance, we have arrived at the following conclusions.

First, 9 out of 16 states included in this study have stepped up their tax efforts over the period from 1961. Such states include Andhra Pradesh, Gujrat, Jammu and Kashmir, Karnataka, Madhya Pradesh, Maharashtra, Tamilnadu, Haryana and Uttar Pradesh. Only incase of 7 states, viz., Assam, Bihar, Kerala, Orissa, Punjab, Rajasthan and West Bengal, tax performance has decreased over this period. Notably, though Kerala's tax effort has gone down, its TEI has throughout remained greater than 1.

Second, Contrary to general belief, this study reveals that the poor states (i.e., the low-income states on per capita basis) have in general made greater tax effort in relation to their respective taxable capacity. Therefore, it cannot be claimed that poor states are poor because they are not making adequate effort to mobilise their taxable capacity.

APPENDIX I

Summary of Estimated Regression Equations

1. 1961-64

$$\overset{*}{T}/Y = 0.8067 + 0.0096\ \bar{Y}^{**} \qquad \bar{R}^2 = 0.2088$$
$$(0.648) \quad (2.663)$$

2. 1967-70

$$\overset{*}{T}/Y = 2.2150 + 0.0035\ \bar{Y}^{*} \qquad \bar{R}^2 = 0.3635$$
$$(2.382) \quad (2.238)$$

3. 1973-76

$$\overset{*}{T}/Y = 1.6670 + 0.0035\ \bar{Y}^{2**} \qquad \bar{R}^2 = 0.5003$$
$$(1.735) \quad (3.744)$$

** Significant at 1 per cent level of significance

* Significant at 5 per cent level of significane

Notes : (i) Figures in parentheses are t-ratios.

(ii) One-tailed 't'test was applied to test the significance of coefficients.

APPENDIX II

TABLE 1

Tax Ratios, Taxable Capacity Ratios, Tax Effort Indices and Ranks of States

-1961-64 -

States	T/Y	$\overset{*}{T}/Y$	TEI	ranks
I: States Making Increasing TE				
1. Andhra Pradesh	4.1	4.1	1.000	6
2. Gujrat	3.9	4.8	0.812	13
3. Jammu & Kashmir	2.0	3.7	0.540	15
4. Karnataka	4.0	4.0	1.000	6
5. Madhya Pradesh	3.5	3.6	0.972	8
6. Maharashtra	4.6	5.0	0.920	10
7. Tamilnadu	4.2	4.3	0.977	7
8. Haryana	4.3	4.5	0.956	9
9. Uttar Pradesh	7.9	7.4	1.142	4
II: States Making Decreasing TE				
1. Assam	3.6	4.2	0.857	12
2. Bihar	3.6	3.1	1.161	3
3. Kerala	4.7	3.7	1.270	2
4. Orissa	2.6	3.35	0.776	14
5. Punjab	7.3	4.9	1.490	1
6. Rajasthan	3.9	3.7	1.054	5
7. West Bengal	4.2	4.7	0.984	11

T/Y = Tax Ratio $\overset{*}{T}/Y$ = Taxable Capacity Ratio

TEI = Tax Effort Index = $(T/Y)/(\overset{*}{T}/Y)$

Table Contd.

Table 1 Contd.

- 1967-70 -

States	T/Y	*T/Y	TEI	Ranks
I : States Making Increasing TE				
1. Andhra Pradesh	4.4	4.1	1.073	6
2. Gujrat	4.7	4.5	1.044	8
3. Jammu & Kashmir	3.2	3.7	0.865	13
4. Karnataka	5.0	4.1	1.220	4
5. Madhya Pradesh	4.0	3.8	1.053	7
6. Maherashtra	5.8	4.6	1.261	2
7. Tamilnadu	5.4	4.2	1.286	1
8. Haryana	4.4	5.0	0.880	12
9. Utter Pradesh	3.3	3.9	0.846	14
II: States Making Decreasing TE				
1. Assam	2.7	4.2	0.643	16
2. Bihar	3.3	3.6	0.917	10
3. Kerala	5.1	4.1	1.224	3
4. Orissa	2.6	3.9	0.667	15
5. Punjab	5.3	5.5	0.964	9
6. Rajasthan	4.5	3.8	1.184	5
7. West Bengal	4.1	4.5	0.911	11

Table Contd.

Table 1 Contd.

-1973-76 -

States	T/Y	*T/Y	TEI	Rank
I : States Making Increasing TE				
1. Andhra Pradesh	6.1	4.9	1.245	2
2. Gujrat	6.0	5.6	1.071	6
3. Jammu & Kashmir	3.4	4.5	0.756	15
4. Karnayaka	5.9	5.3	1.113	5
5. Madhya Pradesh	4.9	4.4	1.114	4
6. Maharashtra	6.7	6.4	1.047	8
7. Tamilnadu	7.2	5.0	1.440	1
8. Haryana	6.4	6.6	0.970	9
9. Utter Pradesh	4.4	4.2	1.050	7
II : States Making Decreasing TE				
1. Assam	3.5	4.5	0.795	14
2. Bihar	3.8	3.9	0.974	10
3. Kerala	5.8	5.0	1.160	3
4. Orissa	2.9	4.4	0.659	16
5. Punjab	6.5	7.2	0.901	12
6. Rajasthan	4.5	4.7	0.957	11
7. West Bengal	4.6	5.3	0.868	13

APPENDIX III

Basic Statistics

Table 1

Per Capita Income and State Domestic Product

(at Current Prices)

States	Per capita income (3-year average) (Rs)			State Domestic Product (3-year average) (Crores of Rs)		
	1961-64	1967-70	1973-76	1961-64	1967-70	1973-76
Andhra Pradesh	339	537	928	1283	2225	4300
Assam	335	581	791	440	861	1300
Bihar	237	409	645	1125	2193	3905
Gujrat	420	667	1134	876	1161	3275
Haryana	386@	810	1399	316@	757	1517
Jammu and Kashmir	302	426	811	102	185	412
Karnataka	332	552	1045	817	1534	3292
Kerala	301	555	948	548	1117	2189
Madhya Pradesh	290	459	776	979	1796	3570
Maharashtra	440	686	1349	1779	3253	7316
Orissa	266	488	793	497	1014	1882
Punjab	430	940	1586	496	1209	2279
Rajasthan	300	455	853	648	1103	2424
Tamilnadu	367	558	942	1299	2164	4088
Uttar Pradesh	267	480	715	1784	4057	6734
West Bengal	410	667	1033	1490	2794	5021

@ Figure for 1961-62 obtained on the basis of post-reorganisation data

Source : (1) CSO (unpublished)

APPENDIX III

Table 2

State tax Revenue : 1961-62 to 1975-76

(3-year average)

States	1961-64	1967-70	1973-76
Andhra Pradesh	53	97	260
Assam	16	23	46
Bihar	41	72	149
Gujrat	34	78	196
Haryana	20@	33	97
Jammu & Kashmir	2	6	14
Karnataka	33	76	195
Kerala	26	57	126
Madhya Pradesh	34	71	176
Maharashtra	82	191	489
Orissa	13	26	54
Punjab	36	64	149
Rajasthan	25	50	109
Tamilnadu	55	116	299
Utter Pradesh	69	133	298
West Bengal	62	114	231

@ Figure for 1961-62 obtained on the basis of post-reorganisation data

Source : Various Issues of RBI Bulletins

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AVAILABILITY OF FINANCIAL RESOURCES AND INTER-REGIONAL DISPARITIES IN ECONOMIC DEVELOPMENT

by

Ram N. Lal*

In recent years in our country literature on flows of finances to different regions (States)[1] has grown more than the finances themselves. Much has been written on this aspect of Indian planning. During the period, a Finance Commission is active in making its exercises for framing recommendations in regard to non-plan transfer of resources from the Centre to the States[2] through shared taxes and duties and statutory grants-in-aid of the revenues of the States, the flow of such a literature assumes amusingly very high proportions. Similarly, when Planning Commission gets busy in finalising Central and States' five year Plans on the basis of, say, Gadgil Formula of Central Assistance to the States, discussions start in papers and on platforms about the magnitude and the manner in which such transfers should be affected to satisfy the spirit of articles 282 and 293 of the Constitution.[3] In all these discussions, generally the solution to the problem of interregional disparities in levels of economic development is sought to be attained. But the available facts and figures reveal that in spite of all these the inter-regional disparities have continued to become larger and larder.

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*Views expressed in the paper are personal and do not reflect the views of the organisation to which author belongs. The author is grateful to Shri D.R. Gupta, Adviser, Planning Commission for his encouragement.

Increasing Inter-Regional Disparities

In the last few years several studies have come out which have tried to identify the relative backwardness of the States from the point of view of not only their relative ranks in regard to per capita State domestic product but also on the basis of the partial indicators of development, Principal Component Analysis, Gini Coefficients etc.[4] These studies and a similar study in Planning Commission reveal that relative backwardness of the States worked out on the basis of per capita state domestic product is more or less identical to the results obtained on the basis of more sophisticated statistical techniques. Thus, if we go by the ranks of the States determined merely on the basis of per capita state domestic product, we find that among the Non-special Category States,[5] the following six States, namely, Andhra Pradesh, Bihar, Madhya Pradesh, Orissa, Rajasthan and Uttar Pradesh have been ranked as the backward States because their per capita State domestic product have been found less than the national average. In this paper we would call them as poorer States and not as backward States. It is revealed from the following table :

Table 1 : States identified as Backward States since Fourth Plan

Five Year Plans	Years for which per capita SDP were taken into account	States which were found out to be backward
Fourth	1962-63 to 1964-65	Uttar Pradesh, Bihar, Madhya Pradesh, Orissa, Rajasthan and Kerala
Fifth	1970-71 to 1973-74	Uttar Pradesh, Bihar, Madhya Pradesh, Andhra Pradesh, Rajasthan, Orissa and Kerala
Sixth	1973-74 to 1975-76	Bihar, Uttar Pradesh, Madhya Pradesh, Orissa, Rajasthan and Andhra Pradesh

Kerala has been found marginally above the national average for the Sixth Plan. Dr. VKRV Rao has worked out variations in growth-inequality among the States on the basis of per capita State domestic product between 1960-61 and 1976-77. The following table which is based on his study reveals that over the long span of fifteen to sixteen years since 1960-61 gaps between the highest per capita State Domestic Product (SDP) at current prices and the per capita SDP of the poorer States have widened.

Table 2 : Percentage of per capita SDP to highest per capita SDP measured at current prices

	State	Year		Percentage change in the percentages
		1960-61	1976-77	
1.	Andhra Pradesh	67.2	49.7	25
2.	Bihar	52.6	38.6	26
3.	Madhya Pradesh	63.6	41.9	34
4.	Orissa	53.1	36.4	32
5.	Rajasthan	69.4	49.0	29
6.	Uttar Pradesh	61.6	45.0	27
7.	Maharashtra	100.0	83.1	17
8.	Punjab	84.4	100.0	-18

Source : VKRV Rao : India's National Income 1950-1980 An Analysis of Economic Growth and Change (p.92).

The gaps or disparities in the levels of development get widened because the rates of growth of the SDP of the poorer States are not in a position to keep pace with the growth rates obtained for the advanced States. An interesting study has been made in this regard by Mathur.[6] (Table 3)

Table 3 : Growth rates in SDP at constant prices : Backward States

States	Fifties	Sixties	Seventies
1. Andhra Pradesh	2.65	1.72	2.96
2. Bihar	3.95	0.68	2.99
3. Madhya Pradesh	4.45	2.11	1.67
4. Orissa	2.46	4.05	2.28
5. Rajasthan	2.96	1.32	2.01
6. Uttar Pradesh	2.32	1.74	2.55
7. All India	3.30	3.17	3.50

Note : Growth rates for fifties and sixties represent compound growth rates. For sixties and seventies, they represent trend growth rates, because available data related only to points of time.

From the above table it would be clear that in fifties rates of growth of Bihar and Madhya Pradesh were above the All-India rate of growth of GDP. Remaining poorer States had lower growth rates than all-India rate. In sixties both Bihar and Madhya Pradesh had a fast decline. Bihar fell down badly as to have the lowest compound growth rate of 0.68 per cent, far below the all India rate. Madhya Pradesh had a compound growth rate of only 2.11 (less than half attained in fifties) in sixties. During sixties Orissa improved its performance much more than other states and stood even higher than all-India growth rate. In seventies Bihar improved its position among poorer states; but Madhya Pradesh went down further. Orissa witnessed a fast decline. Uttar Pradesh, Rajasthan and Andhra Pradesh had a set-back during sixties; but they improved relatively in seventies. However, in seventies all these States remained below all-India performance. These declining rates of growth of SDP in sixties and seventies compared to fifties in the poorer States explain the widening

disparities in the levels of development between the advanced and the poorer states as shown in Appendix 2.

Disparities in Plan Outlays

In our present discussion, we may not consider eight special category States mentioned earlier whose problems are quite different and they need special treatment by the Centre. Almost all their plan outlays are met by the Centre. State Governments of the six non-special category poorer States have always argued that their per capita plan outlays must increase substantially over time and the rates of growth in their plan outlays must be increasingly larger than those of the advanced States if the aim of the removal of economic disparities between sixties has to be attained speedily. Resource mobilisation capacity of these States being weaker compared to the advanced states, the above argument implies that Central Government per capita plan transfers to these States must be progressively larger to enable them to have reasonably larger per capita plan outlays.[7] The levels of per capita plan outlays of the States are based on states' own plan resources which emerge after their non-plan outlays have been fully provided for; and the amounts of Central assistance allocated to them by Planning Commission. Their own resource base being weak, the size of their per capita plan outlays would depend a great deal on the flow of Central assistance. The above argument has its force. In fact, the realisation of the truth in this argument is reflected in the flows of Central assistance to non-special category States during different plan periods as indicated in the following table :

Table 4 : Per Capita Central Assistance to Non-special Category States for Financing Their Plan Outlays (in Rs.)

States	First Plan	Second Plan	Third Plan	3 Annual Plans	Fourth Plan	Fifth Plan	Sixth Plan
A. Advanced States							
1. Punjab	152	50	67	38	72	146	221
2. Haryana	-	-	-	50	76	178	231
3. Maharashtra	14	20	39	24	47	93	174
4. Gujarat	19	26	50	31	58	114	225
5. Karnataka	23	30	63	40	57	114	184
6. West Bengal	40	22	41	27	48	107	154
7. Tamil Nadu	14	29	53	32	48	122	161
8. Kerala	17	24	68	45	80	145	202
Average of Group A	28	27	52	32	55	117	183
B. Poorer States							
9. Andhra Pradesh	19	28	58	39	53	138	208
10. Rajasthan	36	31	74	49	83	150	243
11. Orissa	50	39	74	40	71	169	301
12. Madhya Pradesh	22	32	64	37	61	119	243
13. Uttar Pradesh	13	17	46	30	58	144	218
14. Bihar	14	19	44	19	58	118	224
Average of Group B	20	24	55	35	61	137	230
Average (A+B)	24	26	53	34	58	128	208

Source : For earlier Plans (First to the Fifth), see Central Assistance for States Plan (A Monograph) by Finance and Planning Department, Government of Andhra Pradesh, 1979. For Sixth Plan, the source is Planning Commission.

It would appear from the above table that during the first two five year plans, Group A countries on an average received higher per capita plan assistance from the Centre but in the subsequent plans, per capita assistance for the poorer States increased and the maximum per capita increase on an average has been affected in the Sixth Plan. We may recall that for the

Sixth Five Year Plan Gadgil Formula was modified under which instead of 10%, 20% of the total Central assistance was made available to only those poorer States whose per capita SDP was below the national average. This step up in the share of poorer States speaks of the acceptance of the logic of the argument in their favour. In this context, the question of trade-off between Central assistance and Finance Commission transfers has its own relevance and it requires to be discussed independently because apart from its economic merits and demerits it has its political and constitutional overtones. However, in this paper we may discuss the extent to which surplus generated in the advanced States through fiscal measures of the Central Government can be transferred to the State Governments of the poorer States for investment in human and physical capital formation.[8] This is a very valid question and its answer has to be based largely on the economics of such transfers.

Resource Allocation Criteria

For allocating resources to the States, irrespective of the manner it can be done, the Centre must have a pool of resources which we might call as divisible pool. While keeping in view the objective of the removal of regional disparities as fast as possible, the Central government must also see that the divisible pool also goes on increasing to meet the growing plan demands of the Centre and the regions. Enlargement of the divisible pool with the Centre is ultimately a function of GDP growth rates. GDP growth rate is not merely a function of the rate of investments but also the efficient utilisation of investment assets assuring maximum productivity of scarce capital goods.

Unfortunate conflict in the allocation of resources to advanced and poorer States arises for the reason that while every poor State desires to develop its own resources and increase the standard of living of its people as fast as possible and for that it tries to pressurise the Finance Commission or the Centre to find a way out to allocate larger and larger financial resources to it, the advanced States provide opportunities for most productive investments in terms of massive external and internal economics consisting of sharing the same social overheads facilities, service industries, skilled labour pools, expert management, transportation facilities and above all ample market for the product. In search of large marginal yields, investible resources have a natural tendency for agglomeration in already developed regions of advanced States to the point of their being uneconomic. Apart from already developed areas, there might be certain areas in some poorer States also endowed with better natural resources than others which have greater urgency for exploitation. This is as true to the public sector investment as to the private, because Government is no less interested in augmenting the saving rates at a faster speed as it enables it to have a larger and larger divisible pool to take care of the weaker States. Depending upon the economic situation the economy is placed in, a sizeable part of the Central resources needs to be allocated in a way that domestic saving rate continues to grow and proper condition for all round growth is created in due course.[9] It is this criterion which compells the Central Government to frame its own investment plans and allocate resources to the advanced and poorer States into certain proportions. A kind of balanced reconciliation has to be reached to meet the pressures of various competing demands including those of the poorer States.

The above hypothesis gets extended to the allocation of resources by the States to various segments of their own economy and their economically weaker areas. Apart from this, in order to keep pace with the modern world certain projects must be undertaken by the Centre alone due to the nature of investment being very lumpy and massive. Irrespective of State boundaries certain basic economic infrastructure in terms of generation of quick transport and communication facilities, generation of power resources, extensive research and educational facilities of a high order are the basic responsibilities of the Centre. Finally, it is the Centre which, in a period of national or regional calamity or in a period of inflationary spiral (which tend to erode their resources faster) has to come to the rescue without regard to social, political, economic and other considerations. Centre has to act as a guardian of the States and as a guardian it must have enough strength to discharge its responsibilities well both in respect of advanced States as well as the poorer States and finally to make the nation as a whole grow economically strong the benefits of which naturally goes to the States. We may not forget that ultimately people of the country who are also the residents of the States reap the fruits of investments in human and physical capital whether made by the Central Government or the State Governments.

Per Capita Public Sector Plan Outlays in Different States

Domestically all plan outlays in the public sector whether by the Centre or States take place in States and Union Territories whether in advanced States or in poorer States. Public Sector Plan outlays represent a broader concept of investment. Investments

in the narrow economic sense are identical to formation of physical assets known as physical capital formation. Investment in human capital is excluded from the economic concept. Public sector Plan outlays as understood in the concept of Indian planning represent expenditures on formations of physical assets as well as expenditures incurred on the development of physical and mental capacities of human beings (such as on education, training, medical and health facilities, etc.) which make them more productive. Therefore, for the study of economic development, study of plan outlays by the Centre and the States are more relevant. In our planning exercises, plan outlays of the private sector is expressed in terms of expenditures on only physical capital formation by the private sector embracing private corporate sector and the entire non-corporate non-governmental sector termed as household sector. In other words, from the point of view of movements of resources in a State for its economic development for types of expenditures need to be considered : (i) plan outlays of the Centre whether by the Central Government and Central Government enterprises; (ii) plan outlays of the State, comprising State government and State government enterprises; (iii) Capital formation in physical assets by the private corporate sector in that State; and (iv) capital formation by the households representing entire non-corporate, non-government sector. Items (iii) and (iv) explain private sector plan outlays.

Accepting that investments represent the only basic factor which accounts for the pace of development in terms of growth rates in SDP,[10] it should be clear that a State may have faster economic growth even if public sector plan outlays in that State lag behind the public sector plan outlays in other States provided private sector plan outlays are significant.

Appendix 3 gives State-wise figures of plan outlays of the Centre and the State in respect of all States. We have given in Table 5 below the figures for non-special category States only split up into advanced States and poorer States.

Table 5 : Per Capita Plan Outlays - 1950-80

(Rupees)

States	Per capita Central plan outlay*	Per capita State plan outlays	Per capita plan outlays Centre and States	Growth rates in SDP at 1970-71 prices** 1977-78/1970-71
1	2	3	4	5
A. Advanced States				
1. Punjab	321	1574	1895	4.44
2. Haryana	297	1040	1337	4.56
3. Maharashtra	307	895	1202	5.53
4. Gujarat	393	907	1300	2.72
5. Karnataka	322	699	1021	2.38
6. West Bengal	450	633	1083	3.15
7. Tamil Nadu	307	620	927	2.12
8. Kerala	241	633	874	1.58
B. Poorer States				
9. Andhra Pradesh	245	604	849	2.96
10. Rajasthan	230	594	824	2.01
11. Orissa	510	618	1128	2.28
12. Madhya Pradesh	590	612	1202	1.67
13. Uttar Pradesh	141	568	709	2.55
14. Bihar	589	462	1051	2.99
All India				3.50

Source : Planning Commission

* Represents the total of only identifiable central plan outlays in respect of loans released by HUDCO for housing, industries and mining, railways, major ports, roads and power products.

** Reflect trend growth rates.

sector investment in a State as a determinant of its rate of growth shortly; but before that let us try to go a little below the surface of financial flows from Centre to States and from State Government to different sub-regions in search of their fructification in real investment.

Limitations of Financial Planning

Too much reliance on the models of growth based on financial aggregates of saving, investment and output gives invitations to a number of inconsistencies in the physical planning with the passage of time which affects growth process differently in different regions or areas. Planning models expressed in financial terms assume that finances constitute the only bottleneck in planning for development and if finances move according to plans, physical resources would move automatically and smoothly to the desired directions to fulfil the plan objectives. Regional variations in the costs and usefulness of the physical factors of growth; differences in managerial and human skills; degree of possible leakages and wastes; swoftness with which real resources can be mobilised; unforeseen untowards events and vagaries of nature which can affect adversely the completion of plan projects; degree of adequacy with which financial planning has been tried to be matched with physical planning; changes in the relative prices of the real factors; all these and various other socio-economic and institutional factors lead to a large regional variations in the realisation of the plan objectives in real terms even though variations in financial plannings have conciously been tried to be avoided. Several examples may be given to explain such variations. A national highway may be passing through a number of States; but its utility to various states in their development processes would be different

depending on the manner different States have planned feeder roads. Degree of potential uses of a large irrigation system in different regions depends on the spread of small canals to and from the fields and the manner the system as a whole is managed. Even completed projects will differ in the degree of underutilisation depending on the skill, ability and efficacy of administrators, managers and the technicians. After a stage, these bottlenecks in fact are of much more serious nature than those which are supposed to emerge out of financial constraints. All these weaknesses of the planning system get concealed under neat financial calculations[11] and they fail to give me idea of widening regional disparities. The results of inadequate realisation of plan in physical terms behind the neatly presented success in financial plans are a tremendous concealed waste of real resources, delay in completion of projects, inflation and confusion about the success or failure of the planning models. In the end, at best we have a false impression of the planning actually done. Needless to say that these imperfections in financial planning which tend to give a wrong idea of this movement of real resources to fulfil plan targets have a lot to explain regional variations.[12] It is a high time that at the present stage of our economic development instead of fighting for a little higher or lower financial flows from the Centre to the States for mitigation of regional disparities in growth, serious attention is given to the movement and the management of real resources hidden below the financial flows.

Forgotten Real Resources

We have discussed that movement of finances from the Centre to a State in fact amounts to the transfer of real resources from the rest of the economy to the State in question for development. Similarly, finances do flow from one State to other States through post offices, commercial banks, LIC, cooperative banks, other long-term and medium-term public and private financial institutions and also through public and private non-financial corporate enterprises. Ultimately there is a net inflow of financial resources to each State from the rest of the economy which in fact determines the magnitude of the net inflow of real resources from the rest of the economy. It will be an interesting study how different type of financial and non-financial institutions are functioning presently and what is the net affect of their operations in the distribution of real investible resources in the economy. Unless a proper study is made in this regard, it is difficult to determine to what extent a particular state is a real gainer or loser in the distribution of real savings of the economy.[13] However, in all these discussions an important element representing total real resources available to a State for development in terms of households saving in physical assets which is generally forgotton. It is a form of capital formation a greater part of which is done silently without much fanfare of financial flows; but I think it has its own determined and significant contributions to the growth processes and growth rates of a region, because formation of capital of this type emerges from the below and is not imposed from above. Presently, according to the estimates made by the Central Statistical Organisation (CSO) nearly 75 per cent of the gross domestic saving is generated in the household sector as defined earlier

representing non-corporate non-government sector. A little less than half of the household saving is reflected in saving in physical assets and the rest is done in the form of financial assets which flow to the other sectors for financing real investment. Households savings in physical assets therefore accounts for nearly more than 30% of the total domestic saving. Household saving in physical assets can further be split into two parts: (i) those based on purchased material and hired labour; and (ii) those based on ubiquitous material and own account labour. The latter part, i.e. household saving in physical assets based on purely own-account labour and ubiguitous materials outside the monetised sector of the economy presenting accounts for a little more than 10% of the aggregate saving generated in the economy. Generally, such savings take the form of minor irrigation schemes, kutcha wells, farm and non-farm houses, reclamation, bunding and terracing of land etc. In the unorganised rural and urban sectors of India economy this form of real capital formation meant for increasing agricultural and non-agricultural productivity contributes significantly to the growth rates in SDP of each State. Therefore, State-wise variations in households savings in physical assets in general and physical savings in the form of own-account labour and ubiquitous material in particular have also to be reckoned with as one of the determinants of regional disparities in development.

Conclusion

On the basis of above analysis we may conclude that in Indian context there is a limit to which flows of finances to the poorer states can be augmented with a view to mitigate interregional disparities in the levels of development. Beyond a limit the overall GDP growth rates would get affected adversely and the

objective of balanced regional development would be defeated. Further, in a developing country like India, it would be wrong to assume that financial flows would automatically mobilise physical resources to the extent needed in the desired directions. A number of factors operate to disturb the matching of financial flows with the physical flows resulting in the failure of plan targets in real terms even though targets might have been realised in financial terms. Inadequate physical planning behind a neatly balanced financial planning model leads to tremendous wastage of real productive resources and creates confusion in the minds of the planners. Thus, to seek a solution of regional disparities in the levels of development on the basis of only the flows of financial resources would be a mistake. Lastly, we cannot afford to forget real resources generated in the households sector in the form of saving in physical assets, particularly the segment of it which is generated outside the monetised sector of the rural and urban economy while making a search for the explanatory independent variables determining regional disparities in economic development.

Appendix I

Gadgil Formula for Distribution of Central Assistance

The National Development Council (NDC) at its meeting held in May, 1968, appointed a Committee of Chief Ministers with the Deputy Chairman, Planning Commission as the Chairman to determine, inter alia, the principles of distribution of Central assistance among the States for the Fourth Five Year Plan 1969-74. The NDC Committee at its final meeting held in September 13, 1968, unanimously adopted the formula which formed the basis of Central assistance for the Fourth Five Year Plan. For the Fifth and Sixth Five Year Plans an updated and modified form respectively of this formula was adopted. The original formula for the Fourth Plan was as follows :

Fourth Five Year Plan

1. The requirements of States of Assam, Jammu and Kashmir and Nagaland should first be met out of the total pool of Central assistance.

2. The balance of the Central assistance should then be distributed among the remaining 14 States on the basis of the following criteria.

i) 60% on the basis of population;

ii) 10% on the basis of per capita state income - assistance under this criterion going only to those States whose per capita State income are below the national average;

iii) 10% on the basis of tax effort of individual States determined on the basis of States' per capita tax receipts as percentage of States' per capita income;

iv) 10% on the basis of spill-over into the Fourth Plan of major continuing irrigation and power projects;

v) 10% for special problems of individual states; special problems indicated by the Committee being existance of border areas in a State, desert areas, flood affected areas, chronically drought affected areas, metropolitan areas, existence of untapped resources, population of displaced persons or refugees and percentage of unemployed to the total population.

Fifth Five Year Plan : Updated Formula

In its meeting held on September 1976, the NDC adopted the updated version of Gadgil formula which was as follows :

1. A lump-sum allocation was made for Jammu and Kashmir, Assam Nagaland, Himachal Pradesh, North-East Council States (which came into existence by that time namely, Manipur, Meghalaya and Tripute) and Sikkim.

2. The balance would be distribution among the 14 remaining States as follows :

i) Population - 60% - 1971 census figures;

ii) Per capita tax income - 10% - Average per capita NDP at current prices for 1970-73 as furnished by CSO;

iii) Tax-effort - 10% : based on 1973-74 State tax receipts and per capita income as under (ii) above;

iv) Irrigation and power projects - 10% : revised Fifth Plan outlays on continuing major irrigation and power schemes, with an estimated cost of Rs.20 crores and above and expenditure of atleast 10% by the end of 1973-74;

v) Special problems - 10% : to cover the gaps in resources for financing the inescapable outlays in core sectors of the plan, as well as allocation for desert areas for Gujarat, Haryana and Rajasthan.

It may be stated that all the special problems identified at the time of Fourth Five Year Plan except desert areas were subsequently taken care of by separate programmes and could not be said to constitute special problems to form a basis of Central assistance again in the Fifth Plan.

Sixth Five Year Plan : Modified Formula

The National Development Council at its meeting held on August 31, 1980 decided, inter alia, to distribute Central assistance to States on the basis of modified Gadgil Formula. The modified Gadgil Formula, briefly states, is as under :

1. A lump-sum amount is to be set apart for meeting the requirements of eight 'Special Category' States, viz., Assam, Himachal Pradesh, Jammu and Kashmir, Manipur, Meghalaya, Nagaland, Tripura and Sikkim, out of the total pool of Central assistance.

2. The balance of the Central assistance is to be distributed among the remaining fourteen States on the basis of the following criteria :

   i) 60 per cent on the basis of population.

   ii) 10 per cent on the basis of tax effort of individual States.

   iii) 20 per cent on the basis of per capita State income - assistance under this criterion to be allocated only to those States whose per capita income is below the national average.

   iv) 10 per cent for special problems of States.

3. The weightage of 10 per cent given to 'Continuing major irrigation and power projects' under the original Gadgil Formula is now dropped and correspondingly the weightage for 'per capita income criterion has been increased from 10 per cent to 20 per cent.

Appendix 2

Per capita SDP and Growth Rates at Constant Prices

	Fifties		Sixties		Seventies	
	Per capita income in 1950-51 at 1960-61 prices (Rs.)	Growth rate in SDP at 1960-61 prices 1960-61/ 1950-51* (%)	Per capita income in 1960-61 at 1960-61 prices (Rs.)	Growth rate in SDP at 1960-61 prices 1969-70/ 1960-61** (%)	Per capita income in 1970-71 at 1970-71 prices (Rs.)	Growth rate in SDP at 1970-71 prices 1977-78/ 1970-71** (%)
1. Andhra Pradesh	258	2.65	275	1.72	584	2.96
2. Assam	335	2.81	251	-	538	3.91
3. Bihar	181	3.95	215	0.68	402	2.99
4. Gujarat	381	2.95	362	2.73	829	2.72
5. Haryana	-	-	327	5.90 3/	845	4.56
6. Himachal Pradesh	-	-	264	2.50 3/	678	3.11
7. Jammu & Kashmir	NA	NA	269	3.09	524	5.64
8. Karnataka 1/	287	2.87	296	3.37	685	2.38
9. Kerala	304	2.96	259	3.76	564	1.58
10. Madhya Pradesh	236	4.45	260	2.11	488	1.67
11. Maharashtra	373	4.78	409	2.90	807	5.53
12. Orissa	252	2.46	216	4.05	482	2.28
13. Punjab	404	3.22	366	5.50 3/	1030	4.44
14. Rajasthan	256	2.96	284	1.32	623	2.01
15. Tamil Nadu 2/	245	4.62	334	2.13	595	2.12
16. Uttar Pradesh	271	2.32	252	1.74	486	2.55
17. West Bengal	471	2.67	390	2.45	735	3.15
All India	296	3.30	307	3.17	638	3.50

* Annual Compound Growth Rates

** Reflect trend Growth rates

1/ Mysore during fifties

2/ Madras during fifties

3/ Annual compound growth rates

Source : Unpublished Ph.D. thesis by K.B.L. Mathur, 1981 (University of Rajasthan) on "Central Budgetary transfer criteria in Indian Federal Finance" - A New Approach

Appendix 3

Per Capita Plan Outlays : 1950-80

States	Per capita central Plan outlays 1/ 1950-80	Per capita State plan outlays 1950-80	Total per capita plan outlays Centre & States 1950-80
A. Special Category States			
1. Assam	412	672	1084
2. Himachal Pradesh	714	1018	1732
3. Jammu & Kashmir	355	1418	1773
4. Manipur	655	1156	1811
5. Meghalaya	48	1243	1291
6. Nagaland	33	2886	2919
7. Sikkim	586	1888	2474
8. Tripura	39	671	710
Sub Total A			
B. Non-Special Category States			
9. Andhra Pradesh	245	604	849
10. Bihar	589	462	1051
11. Madhya Pradesh	590	612	1202
12. Orissa	510	618	1128
13. Rajasthan	230	594	824
14. Uttar Pradesh	141	568	709
Sub Total B			
C. Non-Special Category Advanced States			
15. Gujarat	393	907	1300
16. Haryana	297	1040	1337
17. Karnataka	322	699	1021
18. Kerala	241	633	874
19. Maharashtra	307	895	1202
20. Punjab	321	1574	1895
21. Tamil Nadu	307	620	927
22. West Bengal	450	633	1083

Source : Report of the Working Group on Inter-regional Pattern of Investments by Centre, Banks and Public Finance Institutions. Appointed by Planning Commission (August 1982)

1/ Represents the total of identifiable Central Plan outlays in respect of loans released by HUDCO for housing, industries and mining, railways, major ports, roads and power products.

Footnotes

[1]For the purpose of this paper, a region is taken to be identical to a State since the available data pertaining to the transfer of resources from the Centre to the States and other relevant information are based on administrative boundaries of the States.

[2]The constitution provides for transfer of resources from the Centre to States under Finance Commission recommendations to be constituted by the President every five years in the following form: (i) through the levy by the Centre, but assignment in whole of the proceeds of certain taxes (Article 269); (ii) through mandatory sharing of the proceeds of income tax (article 270); (iii) through permissive participation in the proceeds of Union excise-duties (article 272); and (iv) through statutory grants in aid of the revenues of the States (article 275).

[3]Planning Commission gives Central plan assistance to the States under article 282 of the Constitution which permits transfers 'through grants for any public purpose' and under article 293 permitting transfers to the States by the Centre 'through loans for any purpose'.

For the first time, in connection with Fourth Five Year Plan (1975-79), National Development Council adopted a formula which formed the basis of distribution of Central assistance to the States for plan purposes. This formula is known as Gadgil formula in the name of the then Deputy Chairman of the Planning Commission Prof. D.R. Gadgil. The formula as adopted for the Fourth Five Year Plan and its later updated and modified forms are given in Appendix - 1.

[4]Some of the Important studies may be mentioned as follows: Hemlata Rao - Centre-State Financial Relations, 1981 Chapter IV; Uma Dutta Roy Choudhary and Grace Majumdar: "Alternative measures of Economic Development for Inter-state Comparison", XIth Conference of IARNIW (1977), D.M. Nanjundappa , Inter-governmental Financial Relations in India (1974); M.N. Pal, "Regional Disparities in the Levels of Development", Indian Journal of Regional Sciences (1975), Volume VII.

[5]Under the modified Gadgil Formula applicable for the Sixth Five Year Plan, following eight States have been considered as Special Category States: Assam, Himachal Pradesh, J & K, Manipur, Meghalaya, Nagaland, Sikkim and Tripura. Even though in respect of per capita income, some of these States might be found above the levels obtained in many non-special category States, these States are considerably behind the non-special category States in the matter of resource base both on account of historical lack of development and their difficult geography. Lack of means of communication due to difficult accessibility, incipient stage of development administration, tribal nature of socio-economic organisation have made these states as special-category States requiring very high per capita cost of development over a much longer period.

[6]K.B.L. Mathur - Unpublished thesis entitled 'Central Budgetory Transfer Criteria in Indian Federal Finance - A New Approach. The complete Table is given as Appendix-2.

[7]It may not be relevant to discuss here about Finance Commission Transfers to the States because Finance Commission transfers are designed to take care of mostly the non-plan outlays of the States. For the first time Seventh Finance Commission took into account the resource potential of the States in recommending transfers in a way that poorer States are helped to enable them to take steps more readily for the betterment of the people living in these States. The report says "The revenue equalisation principle we have adopted is a recognition of the fact that States which are less favourably placed in regard to their resource potential should be specially helped in order to place them in a position where they can also take steps more readily for betterment of the people living in those States".

[8]It is possible to think of larger Finance Commission transfer to the poorer States with a view to enable them to have more surpluses left with them after meeting their non-plan expenditures so that the objective of larger transfers through Central plan assistance is met to an extent thereby. Thus, Finance Commission transfers beyond a certain level become substitutes for Central assistance.

[9]For theoretical discussion on various aspects of resource allocation, see "Regional Allocation of Resources" by Louis Lefeber published in Regional Planning, Concepts, Techniques, Policies and Case Studies edited by R.P. Mishra, M.S. Masood and P.D. Mahadeo.

[10]We shall see shortly that there are many more important factors which need be considered in explaining economic growth.

[11]For a comprehensive discussion on the relationship between financial and physical planning, see Chapter on 'Mechanism of under-development and development' in An Approach to Asian Drama by Gunar Myrdal (1969).

[12]Sectoral financial investment targets are no doubt attempted to be based on physical requirements but the movement of Central assistance is independent of sectoral physical targets to a great extent because they are now formula based.

[13]A Working Group appointed by the Planning Commission in 1981 made a study of the pattern of investments by Centre, banks and public financial institutions in different States. It is a commendable effort. However, the study has not devoted its attention to the Statewise measurement of net capital inflow as suggested above.

" STATUTORY TRANSFERS AND REGIONAL DISPARITIES IN INDIA "

A.K. SENGUPTA *

Since the advent of Economic planning in our country, reduction in inter-regional disparities and balanced regional development has been accepted as one of the cardinal objectives of the quinquennial plans. The Industrial Policy Resolutions of 1956 also strongly endorsed balanced regional development and highlighted the importance of optimal resources allocation in the private, public and Co-operative sectors of the economy. In this connection the Second Plan Noted that " In any comprehensive plan of development, it is axiomatic that the special needs of the less developed areas should receive due attention. The pattern of investment must be so devised as to lead to balanced regional development. " During the first three plans weightage was assigned to backwardness of states in the allocation of Central assistance and backwardness of a State was considered as an important factor in the location of Central projects. The Fourth and the Fifth Plan also strongly emphasised the functional relationship between balanced regional development and dispersal of economic activity. The Draft Sixth Plan addressed itself to the problem of regional disparities and admitted that " A substantial part of the problem of poverty is due to the uneven levels of development in different parts of the country. Any attempt at re-distribution on a national scale must imply a reduction in these inter-regional gaps in the levels of development, the standard of living and the quality of life. However, to be successful such an attempt has to form part of the general development strategy." In practice, however, the three decades of plan efforts have miserbaly failed to bring about

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desired changes in the pattern of regional development. The problem of the existing wide-spread regional disparities has baffled the economists and made the general public toungue tied.

Regional variations in India can be expressed in terms of per capita income, the proportion of urban popula--tion to total population, percentage of population living below the normative minimum, percentage of workers in the industrial sector, working population in agriculture and others. Taking Per-Capita State domestic product as the yardsticks of measurement Table-1 shows the relative positions of different States from 1970-71 to 1978-79. Per Capita N.D.P. at current prices registered an increase from Rs.638 in 70-71 to Rs.1214 in 77-78. It is clear from the table that the Per-Capita SDP of five States exceeded the Per-Capita NDP during 70-71 to 75-76. It is to be noted that Haryana, Maharastra, Punjab and W.Bengal recorded a per-capita SDP higher than the Per-Capita NDP throughout the period. The per-capita SDP of Bihar was lowest and Punjab attained the highest per-capita SDP which was two and half times that of Bihar. Again the NDP of India at 70-71 prices increased from Rs.34,519 in 70-71 to 44.179 in 77-78 representing an average increase of 3.7% P.A. In five States the rate of growth of S.D.P. at constant prices was higher than the rate of growth of NDP. The average annual growth rate of SDP was highest in Maharastra and lowest in Rajasthan. A comparative look at the table makes interesting reading. The higher income states in the western regions recorded much greater advancement as compared to middle income and low income states and Punjab topped the list. In spite of her pace of industrialisation W.B. has given way to less

industralised States like Haryana and Gujrat. Among the middle income States Tamilnadu and Andhra Pradesh improved their relative positions significantly. Bihar remained the poorest State and the difference in terms of Per Capita S.D.P. between the first and the last in the list is highly amazing.

A very relevant question here is what brought about the changes in the relative position of the States and thereby influencing the pattern of regional growth. In a country dominated by the agricultural sector, it is the progress of agriculture which is basically responsible for achieving accelerated material prosperity. The phenomenal progress in agriculture in the States of Punjab and A.P. enabled them to attain new lights. Moreover, as all know that the long term growth of a Nation primarily depends upon the availability of infrastructural facilities, the inter-state differences in terms of infra-structure facilities have powerfully contributed to regional imbalnaces. The glaring disparities in infra-structural facilities can be seen from Table (2).

Finance is the lifeblood of every organisation and the development of backward states largely depends upon the flow of financial resources from the centre became the quantum of resources at the disposal of the States always falls short of their actual requirements to provide a wide and complex range of social services and to plan their long term growth. Hence the entire scheme of budgetary transfers through various channels occupies the central position in the Context of balanced regional development and over-all economic

growth. In India the scheme of Union-State transfers of resources receives added significance in the Indian federal framework because of the prevelence of the invariable tendency of centralisation of revenue to a greater degree.

In our country, the Central Government assists the States through three important types of transfers, viz., statutory transfers based on the recommendations of the Finance Commission, Non-statutory transfers based on the recommendations of the Planning Commission and discretionary transfers. Over thethree decades of planning while the statutory transfers has increased from 31.2% to 43.4%, the plan transfers declined from 61.5 % to 39.3% and the discretionary transfers increased from 7.3% to 17.3%. In the context of balanced regional development the most crucial issue is to examine whether the Finance Commission and the Planning Commission have really made any serious effort worth the name to reduce inter-state disparities or not. From the following Table-3 it can be seen that the statutory and discretionary transfers have been far from progressive with the result that the low income states have always been deprived of their desired share in the sum total of resources.

TABLE-3

Per Capita Transfers in Rupees (1956-81)

Group of States	Statutory Transfers	Plan Trasnfers	Discretionery Transfers	Total
(1)	(2)	(3)	(4)	(5)
A. High Income States				
Punjab, Haryana, Maharastra, Gujrat, West Bengal.	471	338	449	1258

(1)	(2)	(3)	(4)	(5)
B. Middle Income States				
(Tamil Nadu, Kerala, Orisa, Assam, Karnataka, Andhra Pradesh).	542	436	386	1364
C. Low Income States				
(Uttar Pradesh, Rajasthan, Madhya Pradesh, Bihar)	459	398	332	1189
ALL STATES*	516	440	380	1336

* Including Special category States :

Source : Monograph on 'Centre-State Financial Flows and Inter-State Disparities in India-Prof. K.K.George, University of Cochin, 1982.

It is clear from the above table that the interests of low income States have been jeopardised not only in terms aggregate Per-Capita transfers but also in terms of statutory and discretionary transfers. Between high income and Low-income states plan transfers has been progressive but between middle-income and low-income states it has been regressive. During the second, thirdand fourth plans the recommendations of the finance commissions assisted the high-income and middle income states to grow at the cost of low-income states. It is only during the 5th and 6th Plans the low income states received fair treatment from the Finance Commissions, but here too it must be pointed out that Maharastra, Gujrat and

West Bengal received much higher amounts as compared to Rajasthan. M.P. and U.P. were unfortunately enough to receive smaller amounts as compared to Tamil Nadu, Orissa and Kerala, during the 6th Plan Period. One refreshing feature of the working of the Finance Commission is that they all favoured the special category states. In the following table the aggregate per capita tax shares and grants received by different states between 1955-1981 are shown :-

TABLE -4

Per Capita Tax shares and Grants 1955-81

Group of States	All Plans	
	Taxes	Grants
(1)	(2)	(3)
High Income States		
Punjab	399	6
Haryana	383	6
Maharastra	458	3
Gujrat	453	13
West Bengal	438	86
Group A	441	30
Middle Income States		
Tamil Nadu	430	16
Kerala	426	185
Orissa	420	288
Assam	404	388
Karnataka	407	58
Andhra Pradesh	410	94
Group B	417	125

(1)	(2)	(3)
Low Income States		
U.P.	414	32
Rajasthan	403	150
M.P.	414	14
Bihar	423	33
Group C	416	43

Source : As in Table -3.

From the above table it is evident that the devolution of taxes by the Finance Commissions was lesss progressive as compared to the grant element. Although the Finance Commissions exhibited more progressive attitutde towards grants-in-aid in comparison to tax sharing but the middle income States received larger amount of grants as compared to low-income States. Grants-in-aid under Article 275 occupying a residual position in statutory scheme of transfers constituted only 20% of the total statutory transfers. Again, while the share of Income-tax declined from 58% in the IInd Plan to 25% in the VIth Plan, the share of Exercise Revenue increased from 45% to 75%. Over the same period, In respect of sharing of Income-tax the Finance Commissions unduely favoured the advanced states and failed to do justice to the low-income states. However, the devolu--tion of Excise Revenue has been more progressive than income-tax sharing, particularly, during the Vth & the VIth Plans. The planning Commission in India has tried to resolve the problem of inter-state disparities in three important ways :-

(i) Backwardness has been recognised as one of the important factors in allocation of financial

resources.

(ii) Special area development programmes were directed towards the development of backward states, and

(iii) Adequate measures were adopted to promote private investment in the backward areas.

In view of the fact that only a few states enjoyed surplus in their non-plan revenue account after considering the amounts received on the basis of recommendations of the Finance Commissions and that too highly inadequate, the States invariably depend on Central assistance for financing their plan-programmes. Non-statutory transfers are made by the Central Government on the basis of the recommendations of the Planning Commission in the form of Plan grants and plan loans. Earlier the Planning Commission used to determine the plan size of the States on the basis of needs and feasibi-lity of the paln and thenthe gap between this and plan resources with the States was taken care of by plan assis-tance. The Gadgil formula replaced the earlier practice because of the letters impracticability. Under the Gadgil formula the plan size of the States consisted of the sum total of the States' non-plan surpluses, the additional resources mobilised and Central Plan assistance. In 1979, the Planning Commission employed the I.A.T.P. formula for the maior portion of the plan assistance and the entire discretionary assistance was used by it to help the low-income States. Moreover, the Gadgil formula was modified by abolishing the 10% weightage being given to the continuing irrigation and power schemes and by doubling the weightage of per-capita income below the average. Although we have seen that the plan transfers were progressive between high-

income and low-income States, they were regressive between middle income and low-income States. Here again Punjab, Haryana, Assam, Orissa and Kerala continued to enjoy larger shares and some of the much needy states were denied of the requisite amounts.

From the foregoing analysis it can be safely stated that the scheme of budgetary transfers has failed to meet the challenge of reducing inter-state imbalances. In many cases the recommendations of the Finance Commissions accen-tuated the existing gulf. We now turn to certain observations of the working of the mechanism of Federal resources transfers through the Finance Commission :-

(1) Experience demonstrated that in India no consistent economic policy has been pursued in the devolution of taxes and grants-in-aid. The statutory fiscal devolution has never been made into a positive instrument of economic policy. The whole irony of the system is that our Finance Commissions are the only institutions in the World who gave morethan what they themselves considered necessary and labelled the excess as 'surplus'. Outwardly atleast the govt. is called upon to handover surplus to advanced states in a measure greater than to be given to the really needy states.

(2) The practice of the Finance Commissions to express tax shares in percent terms and grants in absolute terms contributed to the widening of inter-state disparities.

(3) The sharing of Income-tax has been regressive because of the adoption of regressive criteria like contribution. Again the adoption of population

criteria which is a neutral measure of need defeated the objective of equalisation.

(4) The mechanism of statutory resources transfer is so closely associated with the divisible pool that the basic focus of Fiscal policy has been shifted form allocative efficiency to mobilisation of resources. The basic framework for union-state financial rela--tions is likely to remain unaltered unless tax revenue ceases to become the primary determitant of development effort of both the Centre and the States.

(5) Greater emphasis on tax sharing as compared to grants--in-aid resulted in huge surplus on non-plan account with a few states and this ultimately reduced the size of the divisible pool for Central Plan assistance.

(6) The failure of the Finance Commissions to satisfy the needs of the low-income states can be readily attri--buted to their inability to assess the comprehensive fiscal needs of the states.

We all know that the basic principle influencing goevrnment's transfer expenditure is ' Progressivity'.Naturally, flow of funds through tax devaluation and grant-in-aid should bear reciprocal relationship with the real income of states, that is to say, states with lower real income should receive proportionately a larger share by the expenditure recommending authroity and vice-versa. Thus, it is the principle of 'Progressivity' based on federal horizental and vertical equity that constitutes the variegated spectrum of states' 'fiscal needs'. Hence, it follows that non-uniform and discriminatory criteria should be employed to satisfy the equalization principle.

But unfortunately all the finance commissions have deliberately adopted uniform and non-discriminating criteria for the allocation of funds. All the Finance Commissions save the first, repeatedly declared that their process of calculation has undergone a change from budgetary needs to fiscal needs, but actually they all had conveniently used the words inter-changeably. The finance commissions have submitted two fallacious arguments to support their claim of having confined their attention to the 'comprehensive' assessment' of fiscal needs', The first one is their scientific re-assessment of forecasts of states which in reality, repre--sents nothing more than an integration of budgetary correc--tions necessary to ensure comparability. Thus the Finance Commissions miserably failed to interpret the two different terms, " corrections" and " adjustments." The second argument is the non-adoption of the principle of budgetary deficit as allocation criterion for inter-se distribution of taxes. But for all practical purposes it does not make any material difference because the amount emerging out of tax devolution should be exactly equal to the amount of deficit; if it exceeds, it has got to be considered as surplus over the need.

Thus the assessment of fiscal needs on the basis of budgetary factors is likely to be highly erroneous,mainly because of the reasons that budgetary factors don't closely correspond to different types of income flows. What is actually needed for the assessment of fiscal needs is to go beneath the veil of surface budgetary factors, and examine the real economic factors affecting the level of economic development. Eventually, the fiscal content of needs has to be methodologically and statistically derived from the

derived physical standards of service levels.

All the Finance Commissions never felt the necessity of considering developmental factors while recommending various amounts of funds to different states and that is why the special needs of under-developed states were not taken care of. The approach will ever remain deceptive unless both developmental as well as non-developmental factors are taken into account while recommending flows of funds to states, particularly, when the existing framework does't pose any formidable legal constraint.

(7) The Finance Commission should invariably extend its basis of calculation which required the determination of developmental needs of states 'denevo ' and this task can be easily accomplished without having any 'danger' of over-lapping in the respective jurisdiction of functions of Finance and Planning Commissions. If the Finance Commission deliberately confines itself to the four walls of non-plan budget, it reduces itself from being an expert body to a simple ratifying authority. The point which deserves proper attention of the Finance Commission is that the balance from current revenue of states' budget should be covered by the resources transfer which will enable the states to exhibit positive balance in their current account and help in attracting matching grants on the basis of the recommendations of Planning Commissions.

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TABLE - I

ESTIMATE OF PER CAPITA STATE DOMESTIC PRODUCT (AT CURRENT PRICE)

States	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78	1978-79
A. Punjab	1030	1080	1172	1438	1525	1597	1812	1926 P	2101 Q
Haryana	845 Pr	928 Pr	989 Pr	1174 Pr	1217 P	1274 P	1472 P	-	-
Maharashtra	809 P	850 P	881 P	1125 P	1380	1393 P	1505 P	1637 P	1694 Q
Gujrat	829	830	762	1121	1038	1215	1340	1452	-
West Bengal	735	789	790	946	1090	1116	1202	1268 P	1279 Q
B. Tamil Nadu	595	663	691	824	869	840	948	1036 P	1151 Q
Kerala	564	563	636	777	883	907	948	987	-
Orissa	482	480	576	697	701	715 P	659 P	799 P	825 Q
Assam	538	549	572	644	818	776 P	851 P	932 P	961 Q
Karnataka	685	698	712	973	1077	1005	999	1129 P	1146 Q
Andhra Pradesh	584	625	647	829	994	903	901 P	1002 Q	-
C. Uttar Pradesh	486	497	605	673	760	730	815 P	916 P	930 Q
Rajasthan	623	564	593	824	840	850	887	925 Q	-
Madhya Pradesh	489 P	534 P	573 P	726 P	819 P	769 P	759 P	905 P	854 P
Bihar	402	415	480	575	637	661	700	735	-
All India	638	665	717	876	1011	1033	1009	1214	1270 Q

Source: Reserve Bank of India Bulletin September, 1981.

TABLE - II

STATES	Composite Infrastructure of India(1977-78)
Andhra Pradesh	95
Assam	85
Bihar	104
Gujrat	123
Haryana	148
Karnataka	104
Kerala	148
Madhya Pradesh	64
Maharashtra	113
Orissa	80
Punjab	207
Rajasthan	74
Tamil Nadu	145
Uttar Pradesh	118
West Bengal	148
Himachal Pradesh	76
Nagaland	75
Tripura	53
Manipur	52
Meghalaya	49
Sikkim	N.A.
Average	100

Source : Raj Krishna, G.L. Mehta, Memorial Lectures, The Economic Times, May, 1980.

A Draft for Discussion

Land Reforms and Inter-State Disparities in Agricultural Development: A Study of Redistribution of Land in U.P. and West Bengal

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&
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Land being one of the primary sources of wealth and means of production, the pattern of land tenure and its utilization assume high importance in the socio-economic development of a country. The relation between land and development is age old in all the countries. Development in a country is being considered in at most modern sense of the term including among others, optimum utilisation of land for production which in turn affects over all development.

However, development in terms of optimum level of production on land depends on the pattern of land tenures conducive to the level of science and technology, incentives to and welfare of the direct producers of the land. Hence the question of restructuring the pattern of land tenures evolving a pattern of distribution with the objective of economic development. A technocratic approach to the agricultural development, leaving outdated institutional aspect in fact has been proved to be wrong in the interest of the economic development.[1] In a study of land reforms in U.P., Baljit Singh and Sridhar Mishra have summarised the broad objectives of the restructuring of land tenures and land reforms after a

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discussion of the same in various countries. The broad objectives of land reforms in their view "maximisation of output and productivity, fair and equitable distribution of agricultural income and increasing employment opportunities and ethical order. Its instrumentalities are ownership rights, wider land distribution and settlement of private and public investment in agricultural changes leading to scientific farming and high standard of farm cultivation and living.[2]

The authors thereby clarified the objectives of land reforms in terms of increase in agricultural production, equatible distribution of land and employment opportunities. They have, however, avoided the controversy over the instrumentalities of achieving the objectives, particularly that between land reform programmes based on capitalist and communist frameworks.

The same view has been put much more vigorously by A.K. Ghosh in an ILO working paper on agrarian reforms in'West Bengal: objectives achievements and limitations; evolving perspective for judging the agrarian reform in which a balance between achievements of equatible distribution of land and high rates of production. He wrote," the fact remains that a healthy development depends on growth of marketed surplus, and hence the growth of agricultural output and not on the growth of deprivation. By the same reasoning, agricultural growth mus be one of the basic objectives of any agrarian reform programme, for rapid industrialisation is a necessary condition for development in t the long run. To view agrarian reform as primarily a distributive machinery would be to ignore the lessons of history".[3]

Land reform measures in India have in the main subscribedto the view discussed above pertaining to the objectives of land reforms. The objectives and criteria for formulation of the legislative provisions are to be found in the Reports of the Congress Economic Reforms Committee (1948) and Congress Agrarian Reforms Committee (1949). These reports recommended abolition of un-earned income on land by way of abolition of intermediaries, conferring security of tenure to the tenants, equitable distribution of land by way of fixing ceiling on land holdings and cooperativization of agriculture for maximizing the production. In brief, the land reform programmes in India aimed at growth with social justice.

In this preliminary draft of the paper we wish to present the inter-State disparities in the implementation of land reforms with special reference to U.P. and West Bengal; to what extent these dispa rities are reflected in the disparities in the economic development and equatible distribution of land between these two States. Given the possibilities of disparities in the evolution of land reforms - in terms of policy and legislation, socio-political background, administrative measures and implementation in the Indian context it is not surprising that there arecognisable and consequentional inter-State disparities in this respect. Here - below, we enumerate the possibilities for the same.

Causes for the Disparities in the Implementation

(a) India is a federal polity and agriculture is in the State list over which the State has every power so long the exercise of this power goes line with the broad basic principles of the constitution. (b) It is logical that the nature of legisl-

ation pertaining to land reforms and restructuring of the land tenure is to differ from state to state. (c) Although the central government has formulated agrarian reforms it provides only some broad guidelines in terms of objectives of legislation and implementation of land reforms; it didn't make it compulsory for the state governments to follow certain uniform principles regarding the legislative provisions and the modus operandi of the programmes. As a result, all land reform Acts pertaining to abolition of Zamindari, tenancy and ceiling on land holdings were enacted by different states and union territories at different stages. About 20 separate acts were passed by state governments and union territories to put ceiling on land holdings and acquire ceiling surplus land in their respective geographical areas. (d) The problem in not following a universal approach but a piecemeal approach is that the programme will not have a thrust, a central direction and will frustrate the implementation ultimately. It is strange that the congress leadership and Planning Commission did not take cognisance of the possible implications of this policy in terms of inter-state disparities in the implementation of the programmes which were to have a heavy bearing on equitable distribution of land and optimum production.[4] (e) It is not that no such suggestion to give a central direction by an independent agency to the land reform programmes came from any other corner or the leaders were unware of this. On the contrary, the Congress party's Agrarian Reform Committee recommended that central land reforms commissioners be appointed and charged with the taks of quickening the pace of land reforms with necessary powers.[5] Further in the First Five Year Plan a suggestion was made for the creation of a central organization of land reforms to supervise the land reforms programmes in various states.[6] But such recommendation was not incorporated. (f) Given

the absence of a central direction to the land reform programmes, the regional variations, the historical background of land tenure, occurance of peasant movements in some states played an important role in the disparities in the fixation of ceiling laws, categories of lands to be exempted and compensation and its mode of payment which had their effect on the disparities in the redistribution of land and agricultural growth. (g) In addition to these variations, the political forces favourable or against the redistributive programmes of land have played at most important role in quickening the pace or slowing down and frustrating the land reforms programmes. In West Bengal, Kerala and Telangana region of Andhra Pradesh where peasant movements led by Communist parties were strong, the nature of legislation and process of implementation were in favour of redistribution of land. In the States like Karnataka where non-landed interests were the part of governing elite the redistribution of land was fair. But in most of the states particularly those like U.P. the local landed vested interests from both inside and outside the State organs, played havoc in the absence of peasant organisations and those of the beneficiaries.[7]

This discussion did not come into focus in the late forties and early fifties because the majority of governing elite and the leaders of the Congress party were not from rural elite or landlord class. But many electoral studies have shown that after the independence the representation in the State legislatures and the successive general elections to the parliament has been growing.

The above discussion of the possibilties that were to result in large disparities in the implementation of land reforms in the States in India will fairly indicate the implications it has for the inter-

state disparities in the agricultural growth and overall economic development. The draft focusses on the need to study this dimension, taking as many as or all the states.

Measurement of the Impact of Land Reforms on the Patterns of Distribution and Growth and Methodological Problems

Several problems are there in such a study. We cannot fairly study the impact of land reforms on the pattern of distribution. Because a general picture of pattern of distribution after redistribution of land will not specially indicate the success of the redistribution of the programme. For example, the pattern of land holdings in a state changed towards an increase in small and family holdings. We cannot say that this happened due to the acquisition of surplus land and redistribution among the poor peasants and agricultural labourers. The increase of landholdings may be due to division among family members, transfers and getting the record tampered with. In that case measurement of the impact of redistribution of land on agricultural growth will become much more difficult. Consequently a study of inter-state disparities in the implementation of land reforms reflecting in the disparities in the growth pattern is not an easy process. Inter-state disparities in agricultural production as a manifestation of disparities in the implementation of redistribution of land programmes will also be a difficult process. Differentiation between the impact of technological and modern agricultural practices and impact of redistribution will be crucial, notwithstanding the fact that a fair redistribution is positively corelated with increase in productivity through progressive cultivation on small holdings. However, comparison of the pattern of land redistribution and growth before and after the reform periods can be relied upon to some extent, in the absence of specific and purposi studies of this type.

Legislation for Redistribution of Land in U.P. and West Bengal

The first phase of land reforms in India, the abolition of Zamindari and Jagirdari have not resulted in significant redistribution of land. The direct producers and the unprivileged tenants didn't benefit much. The programmes which gave a thrust to the redistribution of land were passed around 1960 in most of the states. However, in West Bengal redistribution of land started with the introduction of West Bengal estates Acquisition Act 1953 which aimed at acquisition of estates, of rights of intermediaries therein a nd certain rights of raiyats and under-raiyats. It also aimed at regulating tenancy after vesting all estates. The intermediaries were permitted to retain in their possession 25 acres of agricultural land per individual. This apart, the intermediaries were allowed to retain 20 acres of non-agricultural and home-stead land. In the case of raiyats and under-raiyats who got their land cultivated by bargadards the government was empowered to acquire land over and above 33 acres per one individual. In course of time these provisions were amended and the ceiling limits were lowered and exemptions from application of the ceiling to various categories of land which provided in the original act were withdrawn.

The West Bengal Land Reforms Act 1955 originally provided for a ceiling upto 25 acres per individual with an exemption to seven categories of land on which commercial crops were grown. So, the WBLR Act 1955 is not very much different from the WBEA Act of 1953 as the former Act also allowed the land holders to retain land beyond ceiling laws in the name of religion, trusts etc. Subsequently this act was ammended for several times to plug the various loopwholes and to make it more progressive. Among others, the most important pro-

visions introduced in course of time were reducing the ceiling limit to 15 acres and applying it to a family in the place of individual.

In U.P., Abolition of Zamindari Act 1950, unlike the West Bengal Acquisition of Estates Act 1953 does not have much distributive potentiality. Like other Acts enacted for abolition of intermediaries it has failed to benefit the direct producers on land. The major Act which deals with redistribution of land in U.P. is Uttar Pradesh Imposition of Celing on Land Holdings Act 1960. This Act provided for a ceiling on landholdings upto 40 to 80 acres applied to individual holder a nd 10 types of land were exempted from the ceiling laws. In course of time the fixation of ceiling on landholdings has been reduced to 12½ acres to 30 acres varying according to the different regions and nature of land.

Notes

1. P.C. Joshi, in A.R. Desai (Ed.), 1978, "Rural Sociology in India," Bombay, Popular Prakasan.

2. Quoted from Baljit Singh and Sridhar Mishra,1964, A Study of Land Reforms in U.P., New Delhi : Oxford.

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